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ANNOUNCEMENT.

To the end of making a textile journal whose influence shall be wider and more powerful we take pleasure in advising our readers and advertisers that with this issue there is combined with COTTON, SOUTHERN MILLS, long published at Greensboro, N. C.

The combining of trade magazines in many industrial fields has through numerous recent experiments proven to be a wise policy, and has in other instances resulted in materially enhanced value to the reader and correspondingly increased profit to the advertiser.

From our advertisers in COTTON and SOUTHERN MILLS, already aware of the combination, we have received practically without exception enthusiastic approval. The saving effected through the elimination of one organization will be devoted entirely to the improvement of the single publication. Readers will at the cost of but one magazine receive more than each could give to him separately. All subscribers to SOUTHERN MILLS will receive the combined publication to the end of the period to which they have paid, and subscribers common to COTTON and SOUTHERN MILLS will have their subscriptions extended for the unfilled terms of the two.

The publishers extend their thanks for the many expressions of commendation received, and shall redouble their efforts in the endeavor to deserve the confidence manifested by readers and advertisers alike.

WHAT WILL THE COTTON CROP BE?

We give space elsewhere in this issue to a communication from G. R. Hightower, president of the Mississippi division of the Farmers' Educational and Co-operative Union of America, in criticism of that portion of our editorial in our last month's issue on the "Planter and the Spinner," relating to the yield of this season's cotton crop, which we tentatively estimated at 14,000,000 bales. Mr. Hightower differs from this estimate as being 3,000,000 bales too high, and to this extent unreasonable and contrary to a position that a Southern man should take "who is a patriot."

Mr. Hightower's letter puts him in the position of trying to boost the price of cotton more than to state facts. The purpose of our estimate had no immediate relation to price but to facts, as near as these could be ascertained by the evidence then before us. We have no doubt of the sincerity of Mr. Hightower in estimating the crop at 11,000,000 bales, but we can not believe otherwise than that his official mission is largely in line with depreciating yield in order to appreciate price, and that his observations of cotton in the field have been biased by his predilection.

We are not at all strenuous about advocating the infallibility of our estimates of the cotton crop before it is harvested, for it has been demonstrated time and again that estimates of this kind are exceedingly precarious because dependent on so many weather contingencies that can not possibly be foreseen. Still estimates, right or wrong, are invariably made by those in the trade, from the grower to the spinner, and they necessarily become the basis of calcu-

lation upon which commercial transactions are conducted for future fulfilment.

Now there is a possibility of Mr. Hightower's estimate of 11,000,000 bales, as the size of the cotton crop for the current season, becoming an actual fact, but at the time it was made, or rather at the time he made his observations in the cotton growing sections that he visited, there was nothing apparent for such a small yield if reports of disinterested authorities of high repute, as the United States Department of Agriculture, and others that could be named, were to be depended on. Even at present writing there is nothing to warrant one in arriving at an estimate approximating a 11,000,000 bale crop, notwithstanding there have been weather conditions seriously impairing the probable yield since Mr. Hightower's observations, and since our editorial was written. How much these unfavorable conditions have detrimentally affected the crop we are unable to say, but, so far as these may be concerned, we doubt if a deterioration exceeding one million bales has happened, which, according to our view of the situation, would place the prospective crop at 13,000,000 bales. We may be inclined to lower these figures, even very materially, before the harvesting season closes, but we are not ready to do so in the face of present evidence as furnished by impartial authorities in whom we place faith as being in touch with conditions as they are.

The weather conditions may be unfavorable during the months of September and October, but they seldom lower the yield to any great extent, but they may lower the grade or quality of the staple. We have an example of this in the conditions affecting the cotton crop of 1906-07 which turned out to be over 13,500,000 bales, notwithstanding the phenomenonly violent autumnal storms of that season, which, at the time, were almost universally supposed to have reduced the yield a million or more bales. There was some loss in the quantity, of course, but it was the quality that suffered most. The crop has now attained a position where about the only thing to affect it will be the appearance of killing frost, and its gathering upon the ability of planters to secure harvesting hands, which, it is conceded, are more readily had this year than last.

The critical time in the growth of the cotton plant is before rather than after September 1. By this time it has a stamina that enables it to resist adverse conditions and vicissitudes that may develop afterwards. Percentage conditions, therefore, that are promulgated by the U. S. Department of Agriculture and other authorities in September and October are of less consequence in their relation to yield than those for the summer months. Then again, whatever the percentage may be it must be in connection with the acreage planted or harvested, and the acreage planted this season is in excess, though only slightly, of that of last season, and the picking will, in all likelihood, be closer. The last August condition of the cotton crop, as reported by the U. S. Department of Agriculture and confirmed by others, on the 25th of that month, was higher than that at the corresponding time last year, or the ten year average, and nearly equal to that in 1906 when the crop was a bumper one. But of vital consequence in calculating the size of the crop, this year, is the August condition affecting the plant in Texas, where 30 per cent. of the total acreage of the South is planted. This condition was given by the government at 75 per cent., or 8 per cent. higher than that of last year at this time.

Assuming that there has been a deterioration of 6.8 per cent. for September, this year, east of the Mississippi River, as compared with that of last year, as stated by a well known New York statistician, this would not show a decline in yield of more than 500,000 bales from the summer prospects, and this is more than off set by the expectations from Texas and elsewhere west of that river. While we believe we fully appreciate the uncertainty of estimates, even at this late period in the season, we can not but realize the fact that the present cotton crop has the largest acreage ever before given to the staple, and that it had an early start, and advanced maturity, and a propitious period of growth and development during the summer; and that the deterioration in the latter part of August was no more than is usual, leaving the crop in a promising condition on the 1st of September.

Mr. Hightower reproaches us for our estimate because a large yield, as we give it, means lower and unremunerative prices for the farmer. We agree with him that a yield exceeding the consumptive demand means comparatively low prices, and we should expect to see a difference of two cents a pound in a crop of 11,000,000 bales and one of 14,000,000 bales, when the demand for consumption is not sufficient for a crop of the latter size. But we can not see how the farmer would suffer to the deplorable extent that he pictures by any such difference. A 14,000,000 bale crop at 10 cents a pound would put into the farmers' pockets $40,000,000 more than a 11,000,000 bale crop at 12 cents a pound. The only place of moment where they might lose is in the cost of harvesting, which would be greater for a large crop than for a small one; the cost of cultivation per acre being about the same for a small as for a large yield.

While we ventured the opinion last month that the price of cotton this season, basis middling uplands, New York market, would not go below ten cents a pound, we meant the average price which spots could be bought. We are not so confident of our position, to-day, as we were then, because of the great lock-out movement among the mills of England that has since taken place, that may have the effect of reducing consumption 70,000 bales of cotton, of all kinds, per week. The planters of the South have, undoubtedly, a big proposition before them for marketing their crops so that its distribution shall be in accordance with a legitimate demand; and the only apparently feasible plan for them to pursue is to warehouse their product and deliver it when wanted for consumption. But we believe in parting with a due proportion of the product as it is wanted for consumption at the best price obtainable. We have no faith in any fixed minimum price. It is contrary to all economic rules of trade.

COTTON STATISTICS OF LAST SEASON.

The commercial crop for the season of 1907-1908 has now been determined by the three leading statistical authorities, with an extreme variation in their records of but little over 140,000 bales. The New York Exchange makes the crop 11,441,269 bales, the New Orleans Exchange 11,571,966 bales, the New York Commercial and Financial Chronicle 11,581,829 bales, with an average weight of 508.67 pounds per bale according to the New Orleans Exchange and 510.03 pounds per bale according to the Chronicle. The amount grown in 1907 is given at 11,421,000 bales by the New Orleans Exchange against the census bureau's record of 11,326,000 bales as reported May 29,1908, show-

ing as close an approximation as can reasonably be expected. These statistics of growth include the linter crop, or, in other words, everything that was ginned.

Taking the commercial crop at 11,571,966 bales, and deducting 105,962 bales as the amount marketed prior to September 1, from the growth of 1908, we have 11,466,004 bales, or about 45,000 bales more than the actual growth of 1907 that were marketed in 1907-1908, showing that the entire growth of 1907 was sent to market last season, and 45,000 bales more taken from the stock on hand September 1, 1907.

Last season's crop was a better one in grade than that of the previous season, that is, it was close on to middling, and also better in quality for spinning, though not entirely satisfactory as much of it was stained and discolored, which, however, did not affect it so much for spinning as for manufacture except for a limited range of goods.

FARMERS WELL OFF FINANCIALLY.

The crop was valued at $672,285,093, to which might be added $87,000,000 as the marketable value of the seed, thus contributing to the wealth of the South nearly $760,000,000, exceeding anything ever before accomplished from this one crop, except last season when the value amounted to about, $800,000,000. This is sufficient to place the farmers in a still more comfortable financial position, which has been improving very materially within the last five years, in particular. With the income that farmers have been receiving for their cotton alone, within the last five years, of nearly 3,500-million dollars, they are in an excellent position to finance their product in a manner that should enable them to secure for it the best price possible. About five-eighths of this amount was exported, a proportion that has characterized the cotton trade for the last eight years, and that has not been subject to any great variation within the last thirty years or more. In this particular, it is a singular fact that the proportion of the American cotton crop exported has varied but little since 1880, notwithstanding the increase in the domestic consumption.

THE EXPORT DEMAND.

The production and the demand for home and foreign consumption have kept a remarkably even pace. In 1880, the proportion of the production that was exported was 65.73 per cent., in 1890 it was 68.15 per cent., in 1900 it was 65.18 per cent., and in 1908 it has been for the season just closed about 65 per cent. With this record before us, it would seem as though it would take a long time before American mill consumption would equal the production, or the ratio now so long established, of one-third domestic and two-thirds foreign consumption, be greatly disturbed; and we calculate that this status may continue till the crop attains a possible maximum size of 20,000,000 bales, on an area of thirty-five to forty million acres, which should not be exceeded as an economic industrial proposition for the agriculture of the South.

EFFECT OF FINE SPINNING ON CONSUMPTION.

In calculating any probable increase in the consumption of cotton by American mills, there should be taken into account the fact that these mills are spinning finer and finer yarn and therefore requiring a less quantity of cotton per spindle. Hence, the increase in number of spindles is proportionally greater than the increase in the production of the raw material, except as it may be affected by mechanical improvements. With the Southern mills, for example, their consumption capacity has declined twenty-five pounds per spindle within the last eight years for the simple reason of their taking up the spinning of finer yarns, more noticeable, as is natural, in localities where the industry has been longer established. If this tendency toward fine spinning should be carried to the same extent as is the case in England the number of spindles in the South could be more than tripled without increasing the consumption more than it is now.

Last season, the Southern mills did not consume more than two-thirds of their quota of capacity, and even the season of 1906-1907 showed a deficiency. There were two causes for this condition—scarcity of help in one instance, and depression in trade, and consequent curtailment, in the other instance.

The cotton manufacturing industry of the United States, during nearly the entire period of last season, suffered in the trade depression that affected all business, as the result of the financial panic of a year ago, less acutely than was the case with most of the other large industrial enterprises. The Arnold Print Works, North Adams, Mass., was the most conspicuous, and really the only large, example in cotton manufacturing of financial embarrassment due to the 1907 panic. The situation to-day, after a twelve months' period of distrust and uncertainty, must be regarded as favorable for an early resumption of a renumerative business as soon as the presidential election is over and a clear understanding had of probable legislation affecting our domestic and foreign commerce. Under normal conditions, the spindleage of the world is none too great, nor the production of cotton too large for the increasing wants of the people of the world.

THE ELEMENTS OF PROSPERITY ARE WITH US.

It is well to be optimistic, that what is, is for the best, and that clouds of depression cast but temporary shadows. There is probably not a business man in the country who does not believe, if he does not know as surely as that sunshine will follow a storm, that the financial disturbances which have agitated the commercial and industrial world the past year will, in time, if not shortly, be supplanted by a sound and healthy condition of trade activities, stimulated by a return of confidence in the integrity of business affairs. The rainbow of returning faith in the stability of business conditions is observed in the preparations that are being made in every line of commercial pursuit in anticipation of a coming trade that is likely to eclipse anything that has ever before occurred. This is no idle dream, or passing hallucination, that has no foundation, but rather it is based on material facts that are in positive evidence in all parts of the country.

The great initial wealth producing sections of the country are already taking a position of commercial activity never before attained, that will tax to the fullest the financial and transportation facilities of the nation before another twelve months go by. The rise to prosperity will be as pronounced, though not so abrupt, but less unforeseen, as the advent of the money panic of a year ago, but in a contrary direction. Great as the faith and feeling of assurance on the part of the American people maybe in the approach of halcyon days of business prosperity, we do not believe they have more than a limited idea of the immense expansion of trade that will soon confront them.

The stagnation that has afflicted our industries and all dependent upon them for the past year, has had for its cause elements quite different and less serious than those that disturbed the general equipoise of business as it ex-

isted twelve years ago, at which time the panic of 1893 had not yet spent itself. To-day there is as much money in the country, convenient for circulation to meet business necessities, as there was a year ago. What is needed is to get it out into the channels of trade. For example, there was in circulation on the first of last July $3,045,457,289 of gold and silver coin and certificates, United States and national bank notes, against $2,914,342,256 the same day the year previous. This was $34.81 against $33.86 per capita of the population of the country. What was borrowed from Europe a year ago at the crucial period of the panic has been returned to again enter into the trade of our foreign customers when the demand comes for our export products. It is almost as important for our foreign customers to be well off in a monetary point of view as it is for ourselves. They have been in the habit of taking, annually, 1,800-million dollars worth of products from us, of late years, and we want them to be in a position to continue in good credit to warrant us to solicit their trade to this and a greater amount.

The aggregate value of all the farm products in 1908, according to the forecast made by the Secretary of Agriculture, will be $8,000,000,000, which is 100 per cent. more than that of 1896.

According to the reports of the United States Department of Agriculture, on August 1, crop conditions in the United States were in the aggregate somewhat better (two per cent.) than a year ago, but slightly (one per cent.) below a ten-year average condition on that date. Of crops that were above the average may be mentioned winter wheat, hay, cotton and tobacco. Corn, barley, rye, buckwheat, apples, and flax were slightly below the average, potatoes above five per cent. below, and oats nearly ten per cent. below the average. In the South Atlantic States crop conditions were favorable, being about four per cent. better than a year ago and nearly five per cent. above the average. In the South Central States, also, conditions were favorable, being about eight per cent. better than a year ago, and two per cent. better than the average.

These conditions may have been affected somewhat by climatic influences since the date of their promulgation, but they are substantially the same now as they were then.

A CALL TO OVERSEERS.

At a recent meeting of the Spray, N. C., Textile Overseers and Master Mechanics' Association a committee was named to inquire into the feasibility of organizing an association composed of overseers, chief engineers and master mechanics of the textile mills of the South, and to formulate plans whereby such an organization could be affected. This committee immediately set about to learn if such an organization was desirable and acceptable, and in this undertaking it has met with the approval and encouragement of overseers, superintendents, and mill managers generally. In view of such encouragement the committee is calling upon all overseers, designers, master mechanics, and chief engineers of the textile industry of the South to meet at the court-house in Charlotte, N. C., on October 23 and 24, 1908, at 3 p. m. each day, for the purpose of organizing an association as above set forth.

Washing after mercerising nowadays takes its place as one of the most important features of the whole operation, and forms a subject of lively interest to all with ideas for simplifying it hand in hand with true economy.

THIS SEASON'S COTTON CROP.

Views of the President of the Mississippi Division of The Farmers' Educational and Co-operative Union. A 14,000,000-Bale Crop Would Seriously Affect All Interests in the South. Such An Estimate is Unpatriotic. A Reasonable Estimate is a 11,000,000-Bale Crop.

Editor Cotton: I have just read your editorial in your September issue on "The Planter and the Spinner." I note that you express the opinion that there will be a 14,000,0000 bale crop of cotton this year. The publishing of such a report as that is calculated to be a very strong bear factor in the market. If believed and accepted by the Southern people it would mean the selling of our crop this season for two cents a pound less than its real value. Based on your estimate of 14,000,000 bales, that would be a loss of $140,000,000 to the South, or based on what I regard as a reasonable estimate of the crop this year of 11,000,000 bales, it would be a loss of $110,000,000 to the South. This would affect very seriously all interests in the South. The farmer would be depressed and would have to deny himself and family many of the things needed. It would lessen the purchasing power of our people to the extent of the loss, and thus depress trade in all mercantile lines. It would lessen bank deposits to the amount of the loss in value of the crop. It would affect all professional lines, seriously, because of the dull conditions of trade.

No Southern man who is a patriot can afford to lend his influence to the position taken in this editorial. While some parts of it seem to give good advice, and if written from the proper standpoint it would be good advice, but with a 14,000,000 crop as a premise the argument falls flat. This editorial can have but one effect on the market and that is to depress values, and I sincerely hope that no Southern paper will publish such an article.

Public sentiment in the South is the artillery with which the manipulators bombard the market. With Southern sentiment supporting such an estimate so absurd and ridiculous as a 14,000,000 yield this year we can expect nothing but starvation prices.

At the time the crops showed the highest development, a 13,000,000 estimate would have been excessive. The deterioration during the last three weeks has been the greatest ever witnessed. The deterioration throughout the state of Mississippi is the greatest I have ever known. This state can not make a pound more cotton than it did last year. I have just returned from a trip through all of the country west of the river and find that the deterioration there has been great. Some parts of Texas and Oklahoma excepted. The greater portion of Texas has deteriorated rapidly. That state will fall nearly a million bales short of the 1906 crop. The crop in Oklahoma is very late. The valley lands there almost have no cotton crops on them at all, and that state can not make as much cotton as it did last year. The states in your own section had better crops last year than they will have this year. These are facts that I have seen with my own eyes and have gathered from the most reliable sources.

Oxford, Miss., September 8, 1908. G. R. Hightower.

President Farmers' Educational and Co-operative Union of America, Mississippi Division.

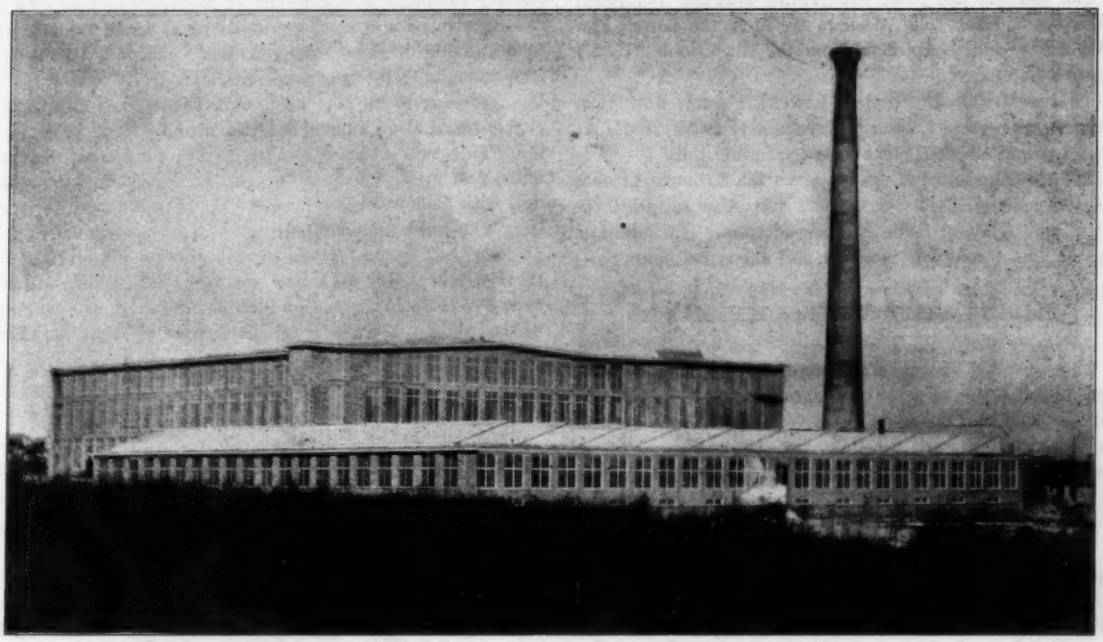
Cotton is the leading textile paper in the South.

Lincoln Manufacturing Co., Fall River, Mass.

Description of A 60,000-Spindle Plant for the Production of Fine Goods.

The accompanying illustration shows an exterior view of the Lincoln Manufacturing Company's plant in Fall River, Mass., situated at the foot of Chicago Street, on the South Watuppa Lake; it being a sixty thousand spindle mill for the production of fine goods, of which about fifty thousand spindles are now installed.

The mill is named for Leontine Lincoln, of Kilburn, Lincoln & Co., Fall River, who is president of the corporation. Mr. Lincoln is also president of the Luther Manufacturing Company, Parker Mills, Davis Mills, Hargrave Mills, Seaconnet Mills, and Kilburn, Lincoln & Co., as well as a director in the Tecumseh Mills, Arkwright Mills, Barnard Manufacturing Company, and King Philip Mills. He is also president of the Fall River Textile School and chairman of the Massachusetts State Board of Charity. In allowing the use of his name for this mill he has shown his confidence in, and given his support to, the further promotion of the cotton industry in Fall River, having been largely instrumental in the organization of most of the above concerns.



MILL OF THE LINCOLN MANUFACTURING CO., FALL RIVER, MASS.

The corporation is capitalized at $600,000, and has for its officers: president, Leontine Lincoln; treasurer, B. B. Read, Jr.; directors, Leontine Lincoln, F. J. Hale, R. P. Snelling, C. H. Sears, J. H. Estes, G. W. Slade, Israel Brayton, J. T. Lincoln, and B. B. Read, Jr.

The plant was built by C. H. Sears, contractor, (who also built the Luther Manufacturing Company, Davis Mills, and Arkwright Mills), from plans prepared by William T. Henry, Fall River, Mass., and consists of a three-story stone spinning mill about two hundred and seventy-five feet long by one hundred and fifty-eight feet wide, and a saw-tooth weave shed about two hundred and twenty feet long by two hundred and ninety feet wide, adjoining each other and leaving an opportunity at the opposite end of each to increase the size of the building at will—large enough to hold, eventually, one hundred and thirty-five thousand spindles—this being made of wood so as to allow of the addition being done with the minimum amount of expense. This mill is operated by one-half of a double horizontal-vertical engine capable of developing a total of four thousand horse-power, built by McIntosh, Seymour & Co., of Auburn, N. Y., and furnished through their agents, J. A. Grant & Co., of Boston. The full length of shaft for the fly-wheel is now put in, with the base for the opposite side, but only one-half of the total width of the fly-wheel is used at present, however.

The boiler house is equipped with seven D. M. Dillon Company's (Fitchburg, Mass.) horizontal boilers, with Lamprey water fronts. It also contains B. F. Sturtevant & Co.'s economizer having a total of 640 pipes arranged in two groups, one of 44 sections of 10 pipes each, and one of 20 sections of 10 pipes each. The two groups are so arranged and piped that the smaller group can be used for the heating system and in the summer time connected in series with the large economizer. These pipes were arranged staggered, and the economizer is large enough to furnish water for the boilers and for heating the plant, which has been equipped throughout with hot water circulation. The Sturtevant Company has also furnished two No. 40 four-pole motors provided with pulleys, one No. 25 four-pole motor of the open type, and one 8x10 horizontal center-crank engine with automatic shaft governor.

From the situation of the plant on the shore of the

South Watuppa Lake a bountiful supply of water is obtained, the water being led by gravity into a well located in the engine-house basement, through a 24-inch earthen pipe, from which well all pumps get their source of supply. This permits of very short runs of suction piping and gives a very compact layout.

The mill is equipped with an electric lighting system, and the American Moistening Co.'s (Boston, Mass.) system of humidification is used in the entire plant.

The Saco & Pettee Machine Shops, Newton Upper Falls, Mass., have supplied the cards, drawing, slubber, intermediate, roving and jack frames, also the ring spinning. The drawing frames are equipped with metallic drawing rolls and the preparatory machinery with the Woonsocket Machine & Press Company's shell rolls; Ashworth Bros.' (Fall River, Mass.) card clothing being used on the cards.

The mules are the Taylor, Lang & Co.'s make (H. G. McKerrow Co., Boston, agents). There are eighteen mules of 848 spindles each, 1⅞-in. gauge installed across the mill with the light on the side, making a particularly fine installation.

The combers are from the Whitin Machine Company, Whitinsville, Mass. The slashers are from the Lowell Machine shops, and the pickers from the Blackstone, (R. I.) Machine Company.

Twelve T. C. Entwistle (Lowell, Mass.) fine yarn slasher warpers and Easton & Burnham (Pawtucket, R. I.) spoolers complete the layout in the spinning mill.

The shafting and pulleys are from the Kilburn, Lincoln & Co.'s shops (Fall River, Mass.) who also supplied the looms and dobbies, with Draper temples. In addition, the mill has a complete machine and carpenter shop.

SLIDING SCALE WAGE AGREEMENT.

The amended sliding scale wage agreement, which has been accepted by the Cotton Manufacturers' Association and the Textile Council, Fall River, Mass., provides for a change in the wage schedule for every change, up or down, of a full 2½ cents, in the average margin for the six months period just passed. The original maximum and minimum limits are retained. There is provided a period of two weeks of suspension after a six months' period has expired before a change in the wage schedule takes effect.

The recognized standard price is 21.78 cents per cut for a margin of 95 points, based on the cost of eight pounds of middling upland cotton and the average selling price of 45 yards of 28-inch 64x64 print cloth and 33.11 yards of 38½-inch 64x64 cloth.

Eighteen cents per cut shall be the minimum rate paid for weaving, 23.96 cents shall be the maximum.

Wages in all departments other than weaving shall be adjusted on the price for weaving as above determined.

CHILD LABOR LAW IN MISSISSIPPI.

In Effect October 1.

Officials in practically every county in the State where cotton mills are located are sending out notices calling the attention to the mill operators to the fact that the new child labor law becomes effective on Oct. 1, and that it must be enforced to the letter.

While a number of mill operators contend that the new law is going to work a hardship on the mill interests of the State and that its enforcement will be a severe blow to the textile industry, friends of the measure, some of whom are manufacturers, do not regard statements to this effect seriously.

The law prohibits the working of any children under the age of 12 years in any mill or factory. Children under 16 years shall not work in factories more than 10 hours a day, or more than 58 hours in one week, or be employed at night labor. No child under 16 shall be employed without consent of parent or guardian. Sheriffs are required to visit factories in their counties at least once each year to see if the law is being observed. County health officers must make inspections at least twice a year, without notice to the mill manager of their coming.

Penalties are provided for mill managers who disregard the law or fail to give correct information to the authorities.

NEW BEDFORD MILL TAX.

Believing that the present method of taxing the cotton mills of New Bedford, Mass., is unjust to the mills devoted entirely to spinning, the Board of Assessors of that city is casting about for a more equitable plan, which shall result in the taxing of mills having weaving machinery, in better proportion with the spinning mills.

According to the method now in vogue, each mill in the city is taxed at so much a spindle, usually $8 or $9 a spindle. This rule applies equally to spinning and weaving mills, and under its operation the machinery in a weaving mill with 50,000 spindles and 1,000 looms is taxed no more than a spinning mill with the same number of spindles and no looms. The matter was brought up by the erection by the Potomska Mill of a new weaving shed, which will escape tax-free if the present plan is in operation next May, as the tax is assessed only on the number of spindles, which is unchanged.

BIG PAY ROLL.

That the Eagle and Phenix Cotton Mills, of Columbus, Ga., pay higher wages to the operatives, according to the number of spindles and looms operated, than other leading mills in the South, is the claim of assistant superintendent Robert Wilson of that plant, who has gone to the trouble to procure a list of the number of operatives, spindles, looms and the pay-rolls at many of the big Southern mills. This list, which will doubtless be of much interest to mill operators and cotton men generally, is given below:

Mills.	Spindles.	Looms.	Employees.	Ann'l. Payroll
Pelzer Manufacturing Co.	130,000	3,400	2,800	$425,000
Olympia Cotton Mill	100,000	2,250	not stated	246,000
Piedmont M'f'g. Co.	67,300	2,066	1,560	240,000
Eagle and Phenix	70 620	2,485	1,800	553,000
Clifton Manufacturing Co.	88,800	2,060	1,200	250,000
Anderson Mills.	70,000	1,864	1,400	218,000
Lancaster Mills.	47,184	1,578	1,050	221,000

A recent French patent protects a dressing for yarns which consists of a solution of linseed oil and beeswax in benzine, with or without resin. The composition of this varnish varies according to circumstances. After passing through the varnish, the yarns are dried at 86 deg. F. for thirty hours. The benzine then evaporates, leaving the oil, wax, and resin. It is claimed that this process greatly facilitates both spinning and weaving, and that it also very much increases the strength and durability of the textile material.

Subscribe to Cotton. $2.00.

National Association of Cotton Manufacturers

The semi-annual meeting of this association was held at Saratoga, N. Y., September 29 and 30, being welcomed to the place by James D. McNulty, president of the village, whose address was responded to by George O. Draper of Hopedale, Mass. The sessions were held in the ball room of the United States Hotel. There was a large attendance from the New England and Middle States, special trains conveying the delegations from New York and Boston.

The first session was held on the morning of the 29th, and was devoted chiefly to President Charles T. Plunkett's address and to a report of the Committee on Standard Specifications for Staple Gray Goods, and to a paper, more or less relating to the preceding, on "What is Plain Cloth? What is Plain Weave?" by Alfred M. Goodale, Boston, Mass., also to a paper on the Cancellations of Orders—Their Cause and Remedy," by Walter S. Newhouse, of the New York bar.

The foregoing papers are given in abstract on subsequent pages, the same as we have treated other papers to which we have given space.

DR. C. J. H. WOODBURY,
Secretary of the Association.

Preceding President Plunkett's address a letter was received from Governor Hughes of New York, expressing regret at not being able to greet the delegates on behalf of the State, because of his political engagements.

The afternoon session of the first day was devoted to the reading and discussion of the following papers:

"Importance of Forest Preservation for Manufacturers," by Hon. James S. Whipple, Forest Commissioner, Albany, N.Y., and W. S. Lee, C.E., Charlotte, N. C. "The Place Which the Cotton Manufacturer Fills in the Economy of the Nation," by E. Howard Bennett, New York City. "Positive and Accurate Humidity Controlling Devices," by J. Irvine Lyle, and W. H. Carrier, 39 Cortlandt St., New York City.

Roger M. H. Wilcox of Portland, Me., was the winner of the association's scholarship. This scholarship was established at the New Bedford Textile School by William Firth, primarily for the benefit of a son of a member or deceased member of the association. The winner this year is a graduate of Harvard University, class of 1906, and of Harvard Law School, class of 1908.

The third session of the first day was held in the evening and devoted to the reading and discussion of the following papers: "The Fifth Congress of the International Federation of Master Cotton Spinners' and Manufacturers' Association Held at Paris," by James R. McColl, Providence, R. I. "Textile Tests in Europe," by Robert J. Hoguet, New York City. "Textile Fabrics and Their Consumers," by Stanley R. Latshaw, New York City. "Relationship Between Cones and Flyers Upon Cotton Roving Frames," by Fay Hamlin Martin, Boston, Mass.

The second day was devoted, in the afternoon, to an excursion to Schenectady, given by the courtesy of the president and directors of the General Electric Co., special electric cars leaving Saratoga Springs at 11 o'clock and arriving at Schenectady at 12:30. On arrival at destination luncheon was given at the works of the General Electric Co., after which members and guests were escorted through the works in small groups, affording an unusual opportunity to witness the latest developments of the applications of electricity in transmission of power, illumination and transportation. The members returned late in the afternoon, and the last session of the meeting was held in the evening, at which the following papers were read and discussed: "Reflections Upon Colors and Dyeing Appliances," by John H. Giles, Amsterdam, N. Y. "Low Pressure Steam Turbines," by Charles B. Burleigh, Boston, Mass. "The Textile Mill Power Plant," by Lewis Sanders, New York City. "Measurements of Power and Its Transmission," by William O. Webber, C.E., Boston, Mass.

The Textile Exhibitors' Association held its annual meeting in the United States Hotel in the forenoon of the last day, September 30. At this meeting officers were elected for the ensuing year and plans made for a textile exhibit in Boston next spring.

Officers of the Association. President: Charles T. Plunkett, secretary Berkshire Cotton Mfg. Co., Adams, Mass. Vice-presidents: George Otis Draper, Hopedale, Mass., Franklin W. Hobbs, treasurer Arlington Mills, Boston, Mass. Directors: Robert Beatty, Robert Beatty & Co., Philadelphia, Pa.; Frederick A. Flather, treasurer Boott Mills, Boston, Mass.; George P. Grant, Jr., treasurer Grant Yarn Co., Fitchburg, Mass.; Edwin Farnham Greene, treasurer Pacific Mills, Boston, Mass.; David S. Johnston, general superintendent Harmony Mills, Cohoes, N. Y.; John W. Knowles, treasurer Page Mfg. Co., New Bedford, Mass.; William H. Loftus, superintendent Clark Thread Co., Newark, N. J.; Henry F. Mansfield, superintendent Utica Steam Cotton Mills, Utica, N. Y.; Joseph Merriam, president Springfield Webbing Co., Middletown, Conn. Secretary and treasurer: C. J. H. Woodbury, Boston, Mass. Auditor: C. E. Roberts, Boston, Mass.

PRESIDENT PLUNKETT'S ADDRESS.

With its growth, the Association is attracting to its membership men of the highest types of cotton manufacturers, beyond our boundaries, as well as in this country.

For more than a generation after its organization in 1854, this Association, under its earlier names, is believed to have been the only one of its kind in the world.

In time as cotton manufacturers in common with those of other industries appreciated the value of co-operation, other associations of cotton manufacturers have been formed with membership covering a state, county or town, until there are known to be over thirty-six of these organizations of a permanent character, and there are doubtless many minor organizations not included in the above.

CHARLES T. PLUNKETT.

These organizations, as far as known, appear to be widely diverse in methods and scope as local conditions may require, but they all emphasize the value of harmonious action upon non-competitive questions.

This Association is constantly in receipt of requests from other bodies, usually commercial organizations, to joint with them in measures which are generally of admitted merit, but the Board of Government has always declined to depart from the policy of this organization in keeping strictly to its purpose of being a cotton manufacturer's association.

Former presidents in their addresses dealt almost exhaustively with the subject of cotton baling and marketing as far as it relates to the spinning industry. The needs of the manufacturer have been set forth with such eminent fairness and without disposition to injure other legitimate interests in attaining the benefits which would accrue to the user of the staple, it seems inexplicable that scarcely a suggestions has given evidence of having taken root. The bale is nearly identical with the one familiar to our forebears.

The excessive, expensive and slovenly tare is as flagrant as ever. The dimensions and density of the bales are not even disguised by a new garb on which the unspeakable hieroglyphic of the shipper might be deciphered by the archæologist of the mill yard. The caricatures of the American bale no longer requires the presence of Egyptian and Peruvian bales in the picture to accentuate its absurdity and the shafts of sarcasm directed by Europeans at this pre-eminently American product finds no wounded patriot to retort or defend the universally detested and condemned package.

The recommendations as to the desirability of uniform contracts, frequent adjusters of grade differences to more nearly correspond with commercial values—limitations upon the range of grades—exclusion of unspinable staples and closer relations between the exchanges and manufacturers and other measures of like import are again before an Exchange committee and there are indications of genuine intent to supplement the changes made effective last January (in which the lowest grade of deliverable tinged and stained cottons and quarter grades were eliminated) by rules governing the New York contract so that it may be kept more on a parity with Southern markets and yet not invite manipulation and corners.

COMMITTEE ON STANDARD SPECIFICATIONS FOR STAPLE GRAY GOODS.

There are as many ideas in regard to what is meant by the simple statement of width, in connection with any particular lot of goods, as there are persons who have anything whatever to do with that particular lot of goods, and there is no definite commercial specification, rule or custom existing in this country that can be appealed to, in the case of any controversy arising over such a point. The same is equally true of the number of threads per inch and the weight per yard, or per piece, or per bale.

The indefiniteness, or lack of detail, that exists to-day in the ordinary cloth specifications used by the trade, as well as the lack of definiteness and uniformity of practice in connection with contracts, have resulted in so many misunderstandings, cancellations, litigations, and other troubles, that the need of same improvement in specification and contract has become very apparent. Assuming a desire to be fair, both by the manufacturer and the consumer, it has, nevertheless, been impossible to amicably and satisfactorily conclude differences of opinion in regard to the character of goods delivered, simply from lack of definiteness, due to the widely varying practice governing such transactions. To provide some authoritative standards for this purpose, will certainly lessen claims and all unpleasant features and generally facilitate the manufacture, as well as the purchase and consumption, of cotton goods.

Should this Association take favorable action upon a request to enlarge the scope of this committee's work, your committee asks for the authority to incur expenses including legal advice not to exceed $2,000, and without further direction of the Association.

WHAT IS PLAIN CLOTH? WHAT IS A PLAIN WEAVE?
BY A. M. GOODALE.

Off-hand, nothing would seem much easier than to define a plain cloth, and a plain weave seems equally simple;

but as one thinks it over certain difficulties arise which are not easily disposed of.

After threshing the question out, the writer offers the following definitions.

A plain weave uses two harnesses, each harness carrying one-half of the warp threads drawn in uniformly and alternately, and each thread of the warp alternately goes over and under each thread of the filling. Note.—Any number, any kind of yarn may be used either in warp or filling.

Plain cloth is cloth made in a plain weave of gray yarn (i. e. not colored), in which all of the warp threads, except the selvadge, are made of one number of yarn, drawn uniformly one or two ends in one dent through reed and with practically uniform tension, and in which the filling threads are one number of yarn.

The numbers of the warp and filling need not be the same, but when different numbers are used, the difference must not be so great as to produce a noticeable effect in the cloth, and both the warp and filling threads must have approximately standard twists.

CANCELLATIONS OF ORDERS. THEIR CAUSE AND REMEDY.

BY WALTER S. NEWHOUSE.

The dry goods trade presents to one not familiar with the cause, a condition of affairs which, if not unique, is at least extraordinary. In all other trades and kinds of business a contract, whether verbal or written, is still a contract with all the word implies. In the dry goods trade a contract appears to be such only in the event that both parties find it to their mutual convenience to acknowledge its existence.

The mills are naturally, continually pressing the selling agent for orders, so that their plants shall not lie idle. The commission house is equally interested in large sales, upon which its commissions is based. The selling agent is between the two horns of a dilemma. On the one hand he is being continually prodded by his mill for more orders. On the other hand he hesitates to send in too large orders to his mill for fear of cancellation.

While the buyer, secure in the knowledge that he will not be called upon to live up to the terms of his contract, gives orders greatly in excess of the quantity he can use.

Another cause of this unsettled condition is that the selling agent frequently sells goods which he knows it is beyond the power of his mill to manufacture. In other words, although the mill is sold upon a certain line the agent still continues to take orders on that line.

Presumably this is done with the expectation and, indeed, the hope that some of his other customers will cancel their orders, and thus afford him a chance to fill all orders at least in part.

It thus appears that the root of the evil lies in the fact that cancellations of orders once given are accepted as a matter of course by the seller.

There has been in existence from early times a statute known as the Statute of Frauds and Perjuries, and this statute of English origin, has become a part of our law. In brief, it provides (so far as is applicable to the subject under discussion) that no contracts for the sale of merchandise shall be enforcible where the amount involved is over fifty dollars, unless there has been a part delivery and acceptance under the contract, or unless there has been some memorandum in writing made, signed by the party to be charged.

This statute, originally intended as a safeguard against unscrupulous sellers who might claim that a certain contract of sale existed and perjure themselves to prove its existence, has become a shield in the hands of equally unscrupulous buyers, who enter into contracts of purchase of goods, at a certain price and secure in the knowledge that they can not under existing conditions, be compelled to perform owing to the protection of the statute, decline to fulfill and when called upon to do so, say to the seller "you have nothing in writing from me to prove the contract and I have not accepted any portion of your goods and you can not hold me to the bargain." Under the circumstances the mill or other producer is helpless.

The impression is prevalent throughout the trade that the mere receipt of a "copy of order" by the buyer binds him to accept the goods and creates a written contract. Such is not the case. The statute provides that the memorandum in order to be binding must be signed by the party to be charged; in the majority of cases this is the buyer. It is not necessary that either party shall sign any printed contract or form. The contract may, and in many cases is evidenced by letters passing between the parties in reference to the particular transaction, but such letters in order to form a valid contract, must contain all the material terms of the contract, such as quantity, quality, price, terms and date of delivery. If any of these elements is lacking in the correspondence, the memorandum is not such a one as satisfies the statute, unless by the terms of the correspondence it is clear that the particular order in question was given for the same quantity of goods and upon the same terms as other and previous orders between the same parties.

Going upon the assumption that the seller has acted in good faith, and intends to deliver in accordance with his contract, he should send for the buyer's signature with each "copy of order," a printed slip referring in terms to the particular "copy of order," and acknowledging its receipt with a request that the buyer sign the slip and return the same to him. This slip the buyer should sign and return to the seller thereby acknowledging receipt of the "copy of order" referred to therein.

The writer in making the above suggestions to various houses, has been met by the objection, "We don't like to insist upon such a thing, for the buyer might think that we were questioning his good faith." The answer to this is, that when a man enters into an obligation which he intends to fulfill, he does not hesitate to commit himself in writing, and if the buyer refuses to sign such a memorandum it must certainly be apparent that he will not fulfill his contract unless it suits his interests so to do. It would seem that such a class of trade can well be dispensed with.

POSITIVE AND ACCURATE HUMIDITY CONTROL.

BY J. I. LYLE AND W. H. CARRIER.

It has long been appreciated that a uniform and a fairly high degree of humidity is desired in most textile processes. It is believed that a simple and positive system of automatic humidity control will pay for itself in a very short time, not only on account of the labor it saves, but more particularly on account of the ability to maintain uniformly any desired percentage of humidity. In many places, as for instance, in the card room or speeder room, while it is desirable to maintain as high a percentage of humidity as possible, an excessive humidity gives instant trouble. With an accurate automatic humidity control, the humidity conditions may be held at any point desired without the slightest danger of exceeding a pre-determined limit.

The problem of humidifying and of controlling the relative humidity with precision under all conditions, is not at all a simple one. To be entirely successful any system of humidifying and the humidity control must possess five essential elements.

1. The humidifying system must be very flexible in capacity and its ultimate capacity must be ample for the most extreme conditions.

2. The temperature should be controlled together with the humidity so far as is practical. Therefore the heating system, regardless of type, must be considered as forming a part of the humidifying system, so the whole can maintain both a constant temperature and a constant relative humidity in cold weather.

In warm weather it is necessary to provide a means to dispose of the immense amount of heat from the machinery in order to cool the mill and prevent undue rise of temperature. This is generally done by ventilation. So it is desirable that the amount of ventilation, whether natural or mechanical, should be considered a part of the humidifying system and be under the controlling system.

3. The automatic control must be capable of maintaining desirable percentages of humidity over a range of room temperature of 25 degrees, as it is frequently impracticable in warm weather to maintain room temperature much below the outside temperature. It should also be possible to secure any desired variation in humidity at different temperatures as well as a constant relative humidity, for instance, in order to secure a constant percentage of regain.

4. It is desirable that means be provided so that the per cent. of relative humidity or per cent. of regain may be varied readily by the operator.

5. It is necessary that the regulator shall respond with exceeding rapidity to any sudden change in humidity, and it is preferable that the control be graduated so that the humidification shall be in constant operation but variable in quantity as conditions may demand.

The relative humidity of the air in the room may be increased mechanically in several ways:

1. By the introduction of steam into the room, either directly or through air ducts.

2. By spraying hot or cold water into the room, either directly or entrained in air currents.

3. By blowing saturated air into the room free from entrained moisture.

4. By simply lowering the temperature of the room without the introduction of moisture, except in a few special cases.

The first means of humidifying is not practicable as it does not provide for cooling in summer, which is essential. The fourth means is usually only practicable as combined indirectly with the second and third. Every system moreover must take care of the incoming air, whether introduced intentionally or unavoidably, and necessarily variable in quantity.

The second system of humidifying can be controlled only through the relation of the wet and dry bulb temperature, while the third system of humidifying is a positive control from the relation of the dew point to the room temperature.

There is no material more suitable for fire-resisting work, and, indeed, for constructional work in general, than concrete, and its value is becoming more widely recognized day by day.

THE FIFTH CONGRESS OF THE INTERNATIONAL FEDERATION OF MASTER COTTON SPINNERS' AND MANUFACTURERS' ASSOCIATIONS. HELD AT PARIS, JUNE 1-4, 1908.

By James R. MacColl, Providence, R. I.

There is probably no branch of industry so thoroughly organized as the cotton spinning trade of Europe. Beginning with the local association in the town or neighborhood, followed by the national federation, the organization is completed by the International Federation of Master Cotton Spinners' and Manufacturers' Associations, which now embraces all the European countries except Russia, and represents approximately 70,000,000 spindles out of a total of 90,000,000 spindles in Europe, and 120.000,000 spindles in the world.

JAMES R. MACCOLL.

The work and purposes of the national federations vary in different countries. In England the matters dealt with include the following: wages, labor disputes, fire insurance, parliamentary legislation, railroad rates, tax assessments, and curtailment of production. On the continent some of the federations also regulate output and prices.

Wherever there is a compact organization of employers, its existence is found to be contemporary with a strong federation of work people. The one pre-supposes or creates the necessity for the other. There is a powerful international organization of cotton employees, which holds an annual congress, and publishes a magazine in three languages: English, French and German.

The international federation of employers was formed in 1904 at Zurich, and has since held an annual congress at Manchester, Bremen and Vienna respectively. This year it was the turn of France, and on June 1 to 4, over 400 delegates from twelve European countries, India, Japan and America assembled in Paris. With the co-operation of American manufacturers two conferences have been held with the growers. The worn out land theory has been exploded, and ample evidence secured that our Southern States are capable of supplying all the cotton the world needs for centuries to come.

The growing of cotton in Egypt, India and the West

Indies has received fresh stimulus, and considerable progress has been made in opening up new cotton lands in other countries. At the Paris meeting reports were submitted regarding the developments under the auspices of the British Cotton Growing Association, and resolutions were adopted, as at former congresses, expressing appreciation of what had been done, and urging the need for continued and persistent effort to increase the growth of cotton.

West Africa seems to be the most promising field. With the co-operation of the British government, new railroads are being built in two sections of the country, and much more rapid progress is predicted when these are completed.

The sentiment of the Paris congress was favorable to the organization of an international committee of growers and spinners, as proposed at the Atlanta conference and action was taken tending to that end. It is believed that the influence of this committee would be to unite on a permanent basis the growers and spinners for mutual benefit and eventually to remove many of the abuses that now exist in connection with the handling of the raw material.

The attitude of the American associations towards this international movement is now pretty clearly defined. It is cordial co-operation so far as consistent with American interests. The membership of the two large associations on this side, the national and the American, is individual and not corporate. This prevents their joining the federation, but apart from this technical obstacle, the American manufacturers can hardly be expected to be in complete accord with all the aims and purposes of the international federation. We want to see our Southern States supply the cotton of the world and are not enthusiastic about the development of cotton fields in new countries. However, much manufacturing may be extended in this country in the future, there is no reason why any foreign spinners should not share with American spinners in securing the cotton that they need, if they are willing to pay an equally good price. Southern prosperity depends largely upon the cotton crop, and the great wealth that must come to the South in the future from this source will tend towards the increased prosperity of our whole country.

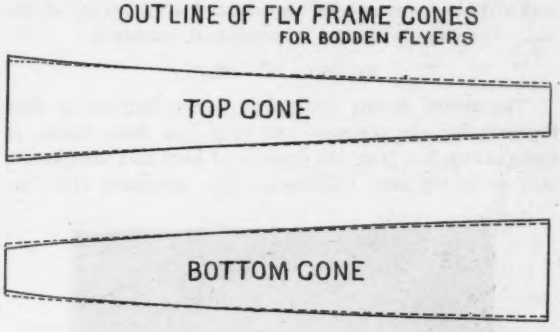
THE RELATIONSHIP BETWEEN CONES AND FLYERS UPON COTTON ROVING FRAMES.

BY FAY HAMLIN MARTIN.

The cones of a cotton roving frame are its most essential feature, as upon them depends the perfect winding of the bobbins, and the more accurate their outlines, the more perfect the winding, and the more perfect the winding, the more perfect the roving that is produced.

The cones are for the winding of the bobbins, and to date no satisfactory mechanism has been devised to take their place. How bobbins are wound is often puzzling to even practical men, but it is simplicity itself. So many inches are delivered by the front roller per minute, and just the same number of inches must be wound upon a bobbin in the same time. Now consider the spindle and flyer as standing still, and we will assume that the roving will draw through the flyer without twist and without breaking. Thus it will be seen that the surface speed of the bobbin must equal the surface speed of the front roller, which is constant. This continues for one layer upon the bobbin, at the end of which time the revolutions of the bobbin is reduced in the right proportions to keep the surface speed the same as before, and so on until a full bobbin is formed. At the end of each layer an adjustment of the revolutions of the bobbin takes place, and this is done by automatically and positively moving the cone belt to a new position. The amount of movement is the same all through the building of the bobbin for a given hank. As each layer is being put upon the bobbin, the cone belt is working upon certain diameters of the cones to produce the right revolutions to keep the surface speed always the same.

But we have to put twist into the roving; to accomplish this we drive the spindle and flyer at a positive speed, and in direct relation to the front roller. The bobbin is also driven at the same speed, and works as one with the spindle in forming the twist, thus if the spindle is making 1,250 revolutions, the bobbin is also making 1,250 revolutions per minute, for the forming of the twist, but the bobbin has also got to do its winding in addition, and as we have already shown, the winding is governed by the cones. It is the adding of this variable speed of the cones to the positive speed for the forming of the twist, that the differential is used. This mechanism, which is surrounded by a great deal of mystery, and of which the machine builders speak in almost tones of awe, is nothing more nor less than a plain adding machine, and all that is required of it, is to add the variable speed of the cones to the positive speed of the main shaft, and do it in a positive and easy manner, with as little friction as possible.



A great deal has been written upon the subject of cone drums and the peculiarity in the construction of them, which at once arrests the attention of even the most superficial observer. We mean the fact that the cones are not of a straight uniform taper i. e., they are not right cones, but the top or driving cone is hollow or concave in its length, while the bottom or driven cone is convex in outline. Long articles have been written upon the explanation of the theory of this, but we have yet to find that the authors have ever taken into account the pressure of the presser upon the roving. They all assume, and say, but not in quite the same words, that the amount of rove given out being constant, it is necessary to vary the speed of the bobbin in proportion to the increase of diameter, to prevent stretching. That the cone belt is to move one inch on one cone for each one-eighth increase in diameter of bobbin. This is quite right as far as it goes, but they leave us to assume that the diameter of a strand of roving remains the same throughout the bobbin. As a matter of fact the strand as it is laid upon the bobbin is of a less diameter, or occupies less space at the beginning than it does at the finish of a bobbin. This increase is very gradual, but constant and is caused by the pressure of the presser condensing the strand. This pressure is greatest when the bobbin is empty or small, and lightest at the finish or full bobbin. Other conditions to be

considered are the speed of the spindle, slipping of the cone belt and the hank roving being spun. These must all be taken into account. Therefore, in finding the true outline, each layer of a bobbin of roving must be considered separately and the diameters of the cones figured for that layer alone. Cones are really so many separate pairs of pulleys connected together in a continuous string.

We will now submit a few proofs of our assertions with diagram showing that the style and type of flyer being used largely influences the true outlines. We show in the accompanying drawing, the outlines of two pairs of cones, one pair of which, shown in full lines, were made to carry an 8x4 flyer, and spin the roving usually spun upon that size 1½ to 2½ hank; the other pair, shown in dotter lines were made to carry a 7x3½ flyer. Both pairs of these cones were made for, and were used in frames equipped with the usual type of flyer. If the flyer had no influence over the shape of the cones, the 7 inch x 3½ inch size flyer would run all right upon the 8x4 cones but no satisfactory results can be obtained by swapping them around in this manner, neither will the 8x4 flyer produce good work when the winding is done with 7x3½ cones. We will also add that the cones for 6x2½ flyer are of a different outline than those shown and partly for the same reasons.

REFLECTIONS UPON COLORS AND DYEING APPLIANCES, AS RELATED TO SPECIAL AND GENERAL PROGRESS.

BY JOHN H. GILES.

The art of dyeing has grown rather empirically than theoretically; its progress has come not from books or speculations, but from the practice of hard and busy hands, and, as in the steel industries, often descended from the

JOHN H. GILES,
Vice-President and Manager of the Klauder-Weldon Dyeing Machine Co.

father to the son. Indeed, what dyeing does, or means, is still a problem with "the learned." Whether its effects are chemical or mechanical is still in dispute. One fact,—one that points toward the availability of any dyeing machine —is the potent effect of oxygen in any coloring process. Pure water without air has no effect upon any properly dyed stuff; and hardly any color is affected by light without air. Presumptively, no color would fade in a vacuum. A fresh photographic "proof," that under a clear sun would fade almost utterly in a few minutes, being wound lightly on an opaque cylinder will remain clear and sharp for many months; and the question was raised among painters in Rembrant's time, whether, since the air was the most fatal enemy of their work, they might not by long continued mixing so aerate every element in their pigments that the effects of time and air would be forestalled, and unfading pictures be produced. It seems a pity that some genius who had the faith to build for eternity did not put his life into the problem, and grind on in unison with the mills of the gods.

By these lights, it is evident that the aerating or oxygenising properties of a dyeing machine are, one way or another, important considerations. What makes color, what sets or sharpens or weakens it, taken as facts won out of the practical manipulation of it, must all have bearing on the selection of a dyeing machine for any special purpose. There are always certain epochs or stadia in the advancement of any art, which a friendly rivalry takes pleasure in recalling. One of these is the invention and introduction of the first of what is called the "Ferris wheel" style of automatic dyeing machines. Two men (Klauder and Weldon) were the pioneers and primates of this style of automatic dyeing machines in this country. Their method included a large wheel furnished with pockets for goods on its inner periphery, and revolving in a proportionate tub nearly filled with water or dye, to immerse and intermittently drain and aerate the goods. Their purpose was to do by machinery what had been done for centuries by hand, by the same ideal of results, namely: immersing, shifting, draining and aerating the stock in constant alternation. Many and various devices and adaptations for different grades and styles of dyeing have followed the organization of this type, but their general principle, approved by the practice and test of many generations, remains the same. For simplicity of construction and operation, uniformity and reliability of result, the elder firm may perhaps be indulged in the homely suggestion that "the old way is the best," especially as reinforced by a choice among all later improvements. It is no inviduous or selfish suggestion, that something in the philosophy of color, as such must accentuate a preference among dyeing machines themselves, regardless of their inventors and their proprietary rights.

RINSING WITH ACID AFTER MERCERISATION.

A French patent protects rinsing with dilute acid. When the goods are completely neutralized the cotton has lost its elasticity, but has for that very reason the greater capability of stretching. After this treatment a much smaller tension than usual is required to produce the luster. The stretching frames are of wood, to prevent the acid from acting on them, and the acid is sprinkled on to the goods from perforated tubes placed above the frames. The acid used is dilute sulphuric acid, and it is collected in wooden vessels placed below the frames, so that, as far as possible, it can be used over again.

Terra-cotta has been employed to a great extent in fire-resisting work, but has not always been a success.

COTTON MANUFACTURING

THE MAKING OF A THREAD.

SINGLE YARN SPUN WITH MINIMUM OF TWIST. SHOULD BE CONDITIONED BEFORE DOUBLING. WINDING PROCESS.

BY SAMUEL WARD.

First Honors Silver Medalist and Clothworkers' Company Prize. Lecturer in Cotton Spinning.

Few persons, other than those actively engaged in the trade, have any conception of the numerous processes through which the various kinds of threads have to pass prior to their being ready for the market.

All threads do not pass through the same course of treatment, although a number of processes in the development are common to all—or at least most threads. The following are a few features more or less common to all threads:

1. The single yarn intended for twisting on the doubling or twisting machine is usually spun with a minimum of twist, consistent with strength, because, if the twist be great it is likely to prevent the proper assimilation of the strands of yarn which comprise the thread.

2. The single yarn for doubling purposes should be conditioned prior to any subsequent treatment. This process consists in adding moisture to the yarn to render it more pliable, and, by consolidation, to reduce in the after processes the number of breakages. The methods by which this moisture is added are numerous; some are of a very primitive character, others more or less scientific. For instance: to pour water on to a skip of cops is a very effective method but lacks uniformity because the outer layers may be saturated whilst the inner layers are only partially moistened, and this practice frequently results in stained cops. A better method is the damping cellar. The floor should be of concrete or a material equally impervious to water. The cops are placed in skips or another receptacle equally open, raised from the floor with bricks, and the cellar flooded, but not sufficiently high to be in contact with the base of the skips. The moisture rising from the surface of the water permeates the mass. This process may take one week, although this time can be very considerably reduced by raising the temperature and therefore the moisture holding capacity of the atmosphere. When this latter method is adopted hygrometers or hygrophants are used so that the relative humidity may be kept constant.

Sometimes the yarn is steamed in a steam chest, and afterwards dried, leaving only the correct percentage of added moisture. This system is the most speedy, but risky, because if the yarn has to stand for a time it quickly becomes mildewed.

3. The cops from the mule and the bobbins from the ring frame are taken to a winding frame, so that two or more ends may be wound together before twisting or doubling. This latter term signifies the twisting together of two or more strands of single yarn in a single or compound form for the purpose of making sewing thread, lace, embroidery, crochet, knitting, hosiery, netting, selvedge and other yarns. It is essential that each strand of yarn, of which the thread is composed, shall be of the same tension throughout, otherwise the thread is weakened and "corkscrewed" yarn produced (a slack strand twisted round a tight strand of yarn giving to it the appearance of a coarse spiralled screw, to which is given the name "corkscrewed" yarn).

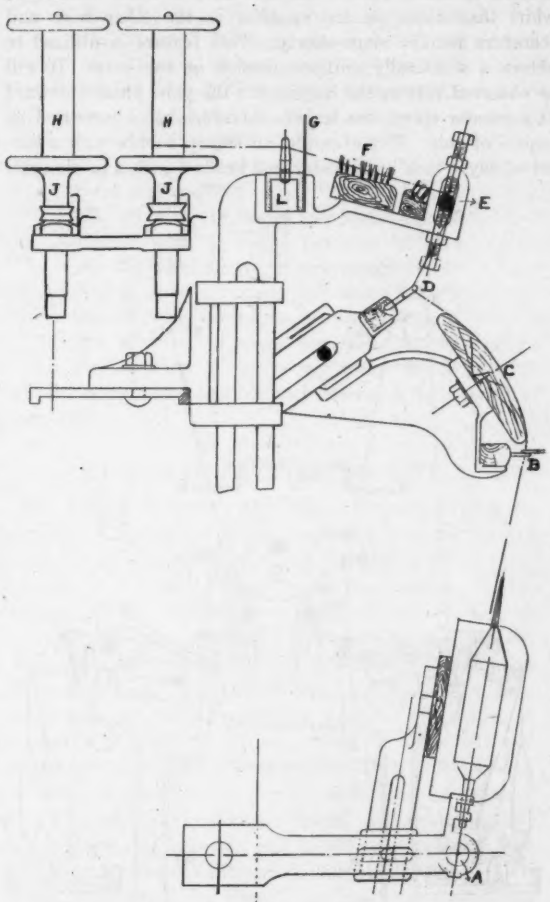


FIG. 1.

To produce this essential relation between the several strands composing a thread, many devices have been introduced, the most successful being the winding together of two or more strands of yarn on a winding frame. This method permits of each strand being wound under exactly the same conditions, and therefore at the same tension, leaving nothing except twisting to be done at the doubling machine. In these circumstances it is possible for the tenter to attend the maximum number of spindles at this machine.

An alternative method is to wind each end separately on to a double headed bobbin or cheese; these bobbins being afterwards taken, in the number required for the strands to be twisted together, to the doubling machine. It is, however, bad policy and altogether too risky to double more than two ends together when wound in this manner, unless the yarn be very coarse.

A winding frame of this type is shown in Fig. 1. The cops or bobbins are mounted on a shaft A, the yarn being passed through the thread wire B, over the drag cloth C, behind the wire or rod D, and over the rod E, through the

brushes F,—used for the purpose of clearing the yarn of any fly or dirt,—and through a slit in the guide plate G to the bobbins HH, carried by the spindles JJ. The spindles JJ are driven from a tin cylinder which passes down the center of the frame. It will be noticed that the spindles are in two rows on each side of the machine, and attention is drawn to this fact because a very useful purpose is served thereby. The line of spindles, nearest the tin cylinder, on each side of the machine have a larger wharve or whirl than those on the spindles in the other lines and therefore revolve more slowly. This feature is utilized to obtain a practically uniform tension on the yarn. It will be observed that as the bobbin fills the yarn passes forward at a greater speed, the tension therefore being increased by reason of this. For example, an empty bobbin with a barrel of say 1 inch in diameter and heads 4 inches in diameter

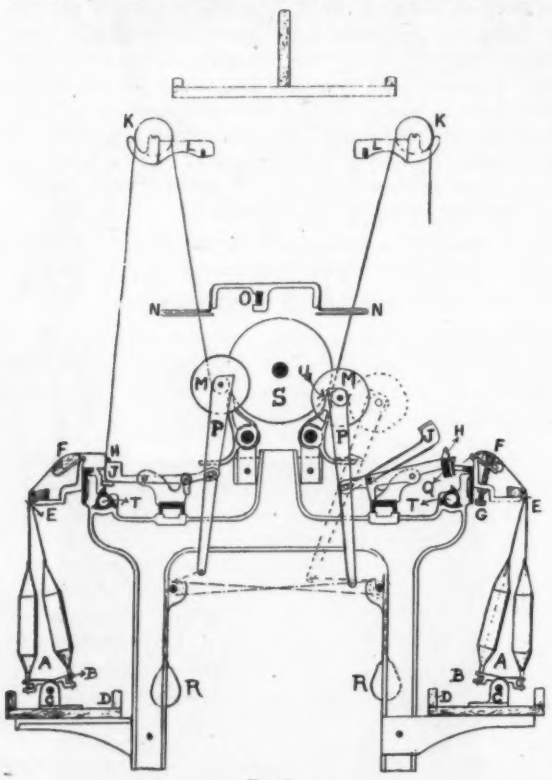


Fig. 2.

wound from start to finish on the same spindle, would mean that when the yarn is winding upon the full diameter its speed is four times as great as when winding on the empty barrel; hence the tension can not be made suitable for both the full and empty bobbin without making "soft wound" bobbins, thus reducing the production. If, however, the spindles are arranged with different sizes of wharves, as stated, this evil is considerably modified. The empty bobbin is placed on the front spindle where it remains until half filled with yarn. It is then placed on a spindle in the back line which will give to the yarn on this half-filled bobbin a surface speed approximately equal to the empty barrel when placed on the front row of spindles.

Referring again to Fig. 1, the rail L is caused by suitable gearing to move up and down for the purpose of guiding the yarn correctly between the two flanges of the bobbin.

One difficulty with this type of bobbin, which is sometimes present in a very serious degree, is the tendency in unwinding to overrun, and thus when yarn is being drawn from two bobbins at the doubling frame, for the same spindle, one bobbin may overrun, delivering slack yarn, whilst the yarn from the other bobbin may be quite taut. This, in itself, is a fruitful cause of "corkscrewed" yarn, and particularly is this the case when the yarn is being unwound from the bobbins at a quick rate. Another disadvantage with this method of winding is that if more than two ends per spindle are being doubled the creel at the doubling frame becomes inordinately high, consequently resulting in darkened passages between the machines. One end per spindle means two heights to the creel, and each additional end means two additional heights to the creel, this, of course, being due to the winder bobbin being larger than the gauge between the spindles on the doubling frame. As previously intimated the more common and certainly the safer practice is to wind two or more strands of yarn together on to a bobbin or cheese, the bobbin in the former case being similar to those referred to in Fig. 1. Cheeses when made on this machine are generally built up on a wooden barrel or tube, this tube being longer than the traverse of the yarn to facilitate handling without fear of damage.

Fig. 2 shows a full section of a machine for winding two or more ends together on to a double-headed bobbin, the bobbin in this case being arranged horizontally instead of vertically as shown in Fig. 1.

The cops or bobbins A are mounted on skewers carried by skewer holder brackets B, on the shaft C. This runs the whole length of the machine supported by the cop box D. The yarn is drawn from the nose of the cops A, and passes through a guide plate E and over an adjustable tension board F. This board is regulated in the manner shown by the screw G, this being utilized for varying the tension on the yarn to suit its strength, in other words, to the counts. After leaving the tension board F each end passes through a separate detector eye or needle H carried in a needle box Q which rests upon one end of a swivel frame J. The yarn is now taken over a flanged runner bobbin K (revolving freely in the bracket L), and thence to the winding-on bobbin M. The guide wire N, attached to the traverse rod O, traverses the yarn backwards and forwards between the bobbin flanges. It is absolutely essential that when one strand of yarn fails from any cause whatever, the winding on the bobbin affected should cease as quickly as possible, indeed the relative value of the numerous machines for this class of winding is largely decided by the speed with which the failure of an end is registered, as a really efficient "stop motion" materially reduces the amount of waste material produced. The bobbin M is carried at one end of the lever P, which has it fulcrum in the swivelling frame J. Attached to the lower end of the lever P is usually a chain carrying a weight R. It will be seen that the effect of this is to keep the bobbin M pressed against the winding drum S, the surface speed of the bobbin, and therefore the amount of yarn wound is constant. As previously intimated winding must cease immediately an end breaks, and this is brought about by the aid of the detector needle H and the wiper shaft T. The needles H are kept out of the path of the wiper shaft T by the tension on the yarn, but on an end breaking the needle is free to fall, and in doing so is struck by the wiper shaft T, the blow being sufficient to dislodge the needle box Q from its position on the lever J, thus allowing this lever to rise.

This action lowers the lever P which carries the bobbin, and in this way the bobbin is lowered from a winding position until it comes into contact with a brake U, which keeps the bobbin out of contact with the drum, thus effectively stopping winding. When the lever P falls a projection on it comes into contact with an extension on the brake U, thus preventing any rebound of the bobbin. To piece up a broken end the bobbin and its lever are drawn forward and automatically hooked into a new position. When the end has been pieced the lever J is depressed, this action being sufficient to put the whole arrangement into working position again.

The right hand side of Fig. 2 shows the parts in the positions occupied after an end breaks; the left hand side shows working positions.

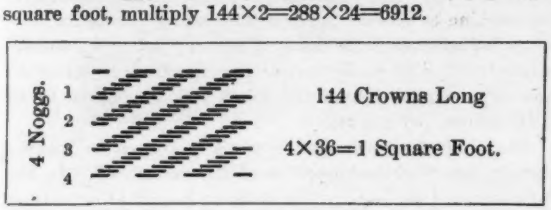
This machine although constructed as a slow traverse winding frame can be readily altered for quick traverse winding for making cheeses.

(*To be continued.*)

CARD CLOTHING.

All sheet cards (except plain set) are made with four crowns to the inch, in length of sheet; in the width, any given number of noggs, according to the number of points required.

In a sheet 4x36 there is one square foot; in the length there are 144 crowns, or teeth, and two points to a tooth. In the sheet above represented, there are four noggs of six teeth in a nogg; therefore, to find the number of points per square foot, multiply 144×2=288×24=6912.



RULE.

To obtain the number of square feet in sheets, multiply length of sheets by width and divide by 144.

To obtain the number of running feet in doffers, workers, strippers, etc., multiply the diameter of cylinder by 3 1/7 to get the circumference. Multiply circumference by length (always adding one inch to the length of cylinder) and divide product by the number of surface inches in one foot or *one yard* of fillet, and then add for *take up* in the proportion of 3½ to 4 feet every 100 feet.

RULE FOR FILLET: When you know the number of running feet in each strip.

Fillet	1	in.	wide;	Divide	No. of run. ft. by	12.	
"	1 1-4	"		Multiply	" " "	5	and divide by 48.
"	1 1-2	"		Divide	" " "	8.	
"	2	"		"	" " "	6.	
"	2 1-2	"		Multiply	" " "	5	and divide by 24.
"	3	"		Divide	" " "	4.	

Rule.—To find the number of points per square foot on sheet cards, multiply 6912 by the number of noggs per one inch.

Rule for finding the number of points per square foot in Fillet: Multiply the number of noggs per one inch by 3456, when there are four crowns to the inch, as nearly all are.

For ordinary carding the following number of points to the square foot is usual.

SHEETS.

No. 28 wire, 5 noggs to the inch,=34,560
No. 30 wire, 6 noggs to the inch,=41,472
No. 32 wire, 7 noggs to the inch,=48,384
No. 33 wire, 8 noggs to the inch,=55,296
No. 34 wire, 9 noggs to the inch,=62,208
No. 35 wire, 10 noggs to the inch,=69,120
No. 36 wire, 11 noggs to the inch,=76,032

Every nogg added per one inch increases the number of points per square foot 6912.

FILLET.

No. 28 wire, 10 noggs per inch,=34,560
No. 30 wire, 12 noggs per inch,=41,472
No. 32 wire, 14 noggs per inch,=48,384
No. 33 wire, 16 noggs per inch,=55,296
No. 34 wire, 18 noggs per inch,=62,208
No. 35 wire, 20 noggs per inch,=69,120
No. 36 wire, 22 noggs per inch,=76,032

Every nogg added per one inch increases the number of points per square foot 3456.

FANCY.

4 Crowns to 1½ Fillet.

No. 28 wire, 10 noggs per inch,=23,040
No. 30 wire, 11 noggs per inch,=25,344
No. 32 wire, 12 noggs per inch,=27,648
No. 33 wire, 13 noggs per inch,=29,952
No. 34 wire, 15 noggs per inch,=34,560
No. 35 wire, 16 noggs per inch,=36,864
No. 36 wire, 17 noggs per inch,=39,168

Every nogg added per one inch increases the number of points 2304.

CO-OPERATIVE SPINNING MILL.

The United Weavers' Association, connected with the Co-operative Society of Ghent, Belgium, is to be the first co-operator in the world, it is said, to start a cotton spinning factory. It is just concluding negotiations for the purchase of about 2,500 square yards of land for a spinning mill of 20,000 spindles, a new weaving shed of 400 or 500 looms, and a flour mill. A capital of 500,000 francs is required to begin with, half of which it hopes to get from working men and women associated with the Federation of Co-operative Societies in Belgium, while the other half will be raised by loans. The spinning mill, which is to be erected at once to provide yarn for the 200 looms now owned and run by the co-operators of Ghent, will contain 2,000 mule and 3,000 ring spindles, and 15,000 other spindles will be put down as soon as the society has a sufficient number of looms to consume the yarn. The machinery, preparatory and spinning, will be supplied by an Oldham firm of textile machinists. The mill will be driven and lighted by electricity and the counts spun will be from 12s to 18s weft and 28s twist. The working hours per week will be 57, as compared with 60 to 65 hours in other Belgium cotton mills, and the wages paid will be from 25 to 30 francs per week as compared with 24 to 26 francs in adjoining mills. In addition to that the weavers will all be shareholders.

Soft waste is made up of carding engine cylinder and flat strips, roller lappings, scutcher droppings, and cardroom waste generally.

Starch finishes should never be softened with soft soap. It is often done on account of the cheapness of the soap, but it is, nevertheless, a mistake. There is often enough free caustic alkali in the soap to tender the fabric. Glycerine is far preferable and too little is required to make it expensive in use.

KNITTING

KNIT-GOODS INDUSTRY IN GERMANY.

ABOUT 90 PER CENT. OF KNIT GOODS IMPORTED BY THE UNITED STATES COMES FROM GERMANY. COTTON'S INVENTION CONCENTRATES THE INDUSTRY AT CHEMNITZ. MEANING OF THE TERM GAUGE. MOST FACTORIES ARE PRIVATE CONCERNS. PLANS FOR AMELIORATING LABOR CONDITIONS.

The history, development, and present importance of the knit-goods industry in Germany, particularly in Chemnitz and vicinity, are described by Special Agent W. A. Graham Clark in the following report to the Department of Commerce and Labor, Washington, D. C.

While the manufacture of knit goods is a larger industry in the United States than in Germany, in 1907 the United States bought from Germany knit goods to the value of $8,384,830. About 90 per cent of the knit goods bought

A TYPICAL GERMAN KNITTING FACTORY.

abroad by the United States in 1907 came from Germany.

The knit-goods industry is one of the most important branches of German cotton manufacturing, and the export trade in this line is very large. The United States is the best customer, especially for hosiery, and takes large quantities, though owing to the great increase of knitting in the United States and to the growing demand from other sections of the world the proportion taken by the United States is less than formerly.

The bulk of the German knit goods is made in and around Chemnitz, but Limbach has also become an important center for knitted underwear; Hhallmein for gloves; Apolda in Thuringia for shawls, caps, and general knitted goods, while other smaller places are centers for certain special lines.

The golden years of the Chemnitz knit-goods industry was the period before the expiration of the patent on the knitting goods machine invented by Mr. Cotton. This machine tended to the erection of large factories and still more centralization because its costliness, its heavy requirements for power, and its difficult manipulation rendered it unsuited for small users. Its introduction marked the start of the great central factories in Chemnitz. Since the expiration of the Cotton patent, in 1883, new competitors have arisen, especially in the United States, and Chemnitz no longer enjoys the complete supremacy formerly accorded it.

At Chemnitz hosiery is the great specialty, and after that knitted gloves and underwear. About 50 per cent. of the Chemnitz output of hosiery finds a market in the United States, though this is a smaller proportion of the total than in former times. In knitted gloves England is Germany's best customer, with the United States second. The underwear made at Chemnitz is mainly for home use, but considerable amounts are taken by neighboring nations of the Continent, and smaller amounts sent to England and the United States. The Germans cater to the particular requirements of each country. There are 88 American houses represented at Chemnitz. The larger of these pay cash, and others give bills of exchange on London. A few buy on open account and a few remit money on receipt of goods.

A number of Chemnitz knitting machines are sold to manufacturers in the United States. The prices of such machines vary, but the present price on a 16-division Cotton machine is $1,666. Such a machine will make 12 dozens of ladies' hose or 26 dozen of socks in ten and one-half hours, running 50 to 60 courses per minute for plain fabrics. For striped fabrics the speed will be reduced to 40 to 46 courses per minute.

There are two principal systems employed in making hosiery, the "full fashioned" and the "seamless". In the full-fashioned the body of the stocking is knitted out flat on

DINNER HOUR AT A CHEMNITZ KNITTING FACTORY.

a machine which makes a dozen or more at a time, and then these are sewed together. The seamless stockings are made on a circular knitting frame. The first system is most used in Germany and the second in the United States. The curves can be better obtained by the first system, and the cost of operation is usually cheaper, but a seam is left where the parts are joined together.

Hosiery is made mostly from yarns ranging from 10s to

32s, but some are used up to 100s, and even in smaller amounts up to 200s. The majority is single, but some are doubled. For knit goods in general 18s to 60s single cops are used. A large amount of Egyptian yarn is employed in this trade.

Knitting machines are usually designated according to the "gauge," but this term has a different meaning in England, in France, and in Germany. The knitting needles—that is, the frame or hooked needles—are fastened in "leads" made of a mixture of lead and tin, usually two needles to a lead.

GIRLS EMPLOYED IN A CHEMNITZ KNITTING MILL.

Studying Cooking and other Home Arts under the Instruction of Women paid by the Factory. Some of these Courses are in the Evening, but in other instances the employers give the Girls the time necessary.

In England the gauge or fineness of a frame signifies the number of leads, each containing two needles, which lie in a space of 3 inches. A No. 24-gauge machine therefore has 2 times 24 or 48 needles to 3 inches, which is 16 needles to the English inch.

In France they first used the same system based on 3 of the old Paris inches, but they now use two gauges, "gros" and "fin," based on 3 French inches, a French inch being one thirty-sixth of a meter (1 meter=39.37 inches). This French inch has come into use because of the inconvenience of the decimal numbering of the meter for divisions into twelfths, etc. The "jauge gros" is used for gauge numbers up to 27s, and the "jauge fin" for gauge numbers from 20s up, the first meaning the number of two-needle leads in a distance of three French inches, and the latter the number of three-needles leads in a distance of three French inches.

In Germany they sometimes use the French system of numbering, which is due to the fact that knitting was first introduced from France, and some factories use the English system, but owing to the inconvenience of both the majority of the Saxon machines are now based on a gauge which is the number of needles to a Saxon inch, which is a more direct and simple method than either of the others. Thus 24-gauge Saxon means 24 needles to the Saxon inch.

The French inch is equal to 1.0936 English inches, and the Saxon inch is equal to 0.9291 of an English inch, so No. 24 gauge would mean, according to the various systems, the following number of needles to an English inch: English, 16; French gros, 14.63; French fin, 21.95; Saxon, 25.83.

In Saxony the gauges run from 24 to 51, the machines in common use having gauges (Saxon) of 30, 33, 36, or 39. In England the gauges (English) in common use are 24 and 27.

The Saxon knitting factories are all private concerns, with the exception of one joint stock company, which is English owned. The managers say that this is due to the fact that knitting is a specialized industry, and that in these days of close competition it is necessary to have a man at the head who is vitally interested in the success of the business and untrammeled by any outside authority. It may also be a factor that stock companies have to publish in newspapers accounts of their standing while private companies do not. The capital in a knit-goods business is not as important as is the management.

Some factories at Chemnitz pay employees weekly and others fortnightly; usually one week's wages are held back. The hours of work are either 61, 60, or 59, more commonly the last, and the factory runs from 7 to 12 o'clock, with fifteen minutes intermission, and from 1 to 6.30 o'clock, with fifteen minutes intermission. They do not usually close on Saturday afternoons, but stop work one hour earlier.

Wages in the knit-goods business in Saxony, are increasing, and owing to the great demand for female labor the wages of the women are rising more in proportion than those of the men.

Some of the Saxon knit-goods manufacturers are very advanced in their plans for ameliorating the condition of their help, and besides giving the boys time off to attend technical instruction, as required by law, they also have courses of instruction for the girls and women in household duties, including cooking and sewing classes, and besides night classes some factories give the girls a few hours off each week to attend such classes in the daytime, the teach-

ers also being paid by the factory. Most of the factories provide a lunch room, with tables and chairs, where the employees can eat their lunch, and many furnish food at cost in such places.

ABROGATION OF THE GERMAN-AMERICAN TARIFF AGREEMENT.

Favored by the National Association of Hosiery Manufacturers. German Chambers of Commerce Are the Arbiters of Price. The Agreement Demoralizes the Hosiery Industry.

Believing that the German-American tariff agreement has injured its business, the National Association of Hosiery Manufacturers has begun an active campaign for its abrogation. The National Board of Trade and the Philadelphia Board of Trade have been requested to join in the fight to the end that the unsettled condition declared by manufacturers to be existing as a result of the agreement may be dispelled. Philadelphia, as the largest producing center of the hosiery trade in the country, is vitally interested. The letter addressed to the Philadelphia Board of Trade by the hosiery association says in part:

"There are 221 manufacturers of hosiery, underwear and other knit goods in the city of Philadelphia, representing a capital of $20,000,000, employing 25,000 persons, and doing a business of $30,000,000 annually. The direct and indirect effects of this agreement have resulted in a forced curtailment and idleness of at least 50 per cent. of the capital and labor as above mentioned."

The German-American tariff agreement went into effect July, 1907, and was one of the pet projects of the late Baron Speck von Sternberg, the German ambassador. It is more of a change in regulation than a change in tariff. It provides that all goods imported from Germany into America shall be at prices fixed by the German chambers of commerce. These are semi-official bodies, and it is practically impossible to go behind their valuation. Before this agreement went into effect the values had been ascertained and vouched for by American representatives abroad.

The National Association of Hosiery Manufacturers asserts in its letter that to compete with these goods at the low price at which they are being imported, it would be necessary to reduce the present wage scale of American operatives at least one-half. It is declared that this can not be done.

"This agreement likewise adversely affects other industries," says the letter, "particularly those competing with foreign goods upon which the tariff is based wholly or largely upon a specific basis. There are 15,000 manufacturers of hosiery, underwear and kindred knit goods in the United States, representing a capital of $132,000,000, employing 182,000 persons, and doing a business of $170,000,000 annually. The direct and indirect effects of this agreement have resulted in a forced curtailment of at least 50 per cent. of the production, capital and labor as above mentioned.

"Of course, not 50 per cent. of the annual production has been brought in, but the fact that importations have been coming in undervalued—at least largely below previous figures, and very much below the cost of similar American products—has caused the jobbers and retailers to withhold purchases of American goods, feeling that all American products must decline correspondingly. Such developments could only be possible provided the present wage scale of American operatives be reduced at least one-half, as German labor is abundant and very cheap.

"American manufacturers could not possibly retain their help and maintain their reorganization at such figures, and consequently would be compelled to close their plants, which would only add to the already large army of unemployed and spread further demoralization in the commercial world."

SOFTYARN SPINNERS' ASSOCIATION.

No Stock on Hand. Demand Picking Up. Further Curtailment Recommended.

The Soft Yarn Spinners' Association held a meeting September 12, at Charlotte, N. C., at which 325,000 spindles were represented. The following resolutions, in substance, were passed.

The spinners, on investigation, found that there is no stock of yarns on hand to amount to anything, and not much in the mills to sell, and but little on consignment, and is much lower than anticipated and greatly reduced since the last meeting in June.

It was further found that the curtailment which was agreed on in June has been more than carried out, the mills having on the average curtailed more than 50 per cent. of their production.

Still further was it found that the demand is picking up, there having been more inquiries during the past three weeks than during many months.

It was the opinion of the members present, representing many cotton states, that the crop of cotton is going to be materially less than has been previously expected, and that cotton will not sell as low as many have thought. In fact, the members think cotton is scraping the bottom now.

All these matters were considered, and it was resolved to recommend to all the spinners of the South that they do not sell yarns for less than 16 cents on a basis of 10s, when middling cotton in New York is selling at 9½ cents; and that the present curtailment of 50 per cent. of their production of the mills be continued until such a time as prices appear to show a reasonable profit to the mills.

It was further recommended that no yarns shall be accumulated that are not already sold; that all mills be urged not to run unless they have orders showing a profit.

The following are the officers of the association: Col. L. D. Tyson, Knoxville, Tenn., president; Charles T. Leonhardt, Knoxville, Tenn., secretary and treasurer. J. W. Cannon, Concord, N. C.; S. A. Carter, Atlanta, Ga.; J. B. McMillan, Talledega, Ala.; J. J. Littlejohn, Jonesville, S. C.; and J. F. Taylor, Kinston, N. C.; are among the vice-presidents.

The first operation which the raw material undergoes in the wadding mill is a chemical treatment and washing, which, in the case of dirty waste, cleans and bleaches it a pure white, and in the case of all sorts removes the waxy or gummy coating of the fiber and renders it absorbent.

The raw materials used by the cotton wadding manufacturer are (1) "linters," and (2) properly opened hard and soft cotton wastes.

SHAPING OR FASHIONING A STOCKING.

The object of the illustrated scheme of knitting is to provide a shaped or fashioned sock or stocking which can be made in a simpler and cheaper manner than usual, the preferred form of the stocking being susceptible of manufacture by a continuous operation which produces a tubular web, upon either a flat or a circular machine, the web in the latter case being formed by rotating knitting instead of by reciprocating knitting, such as is usually resorted to in the manufacture of fashioned stockings. By making the stocking, or rather the blank of which the stocking is to be formed, upon one machine, all expensive transfer operations are avoided such as are necessary when more than one machine is employed in the fabrication of the stocking blank.

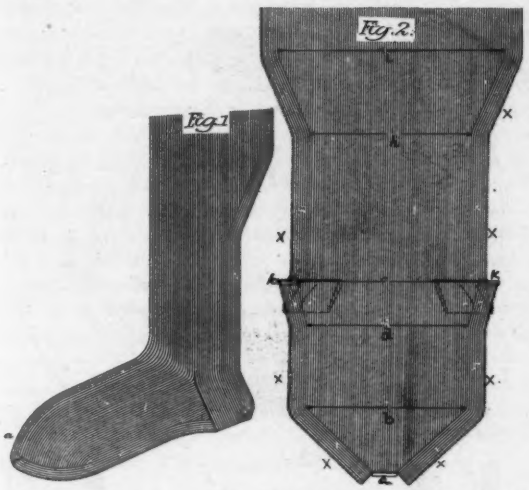


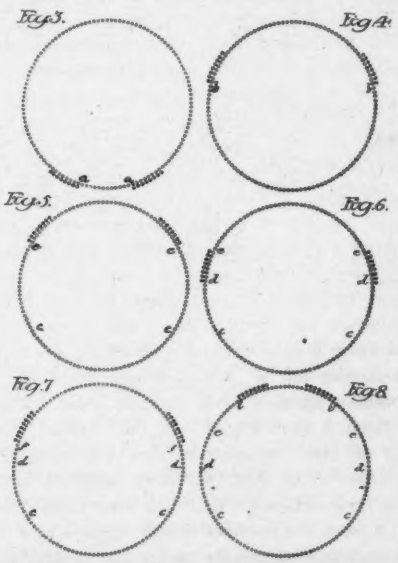
Figure 1, is a view of the foot and part of the leg of a stocking. Fig. 2, is a view of the blank from which the stocking is made. Figs. 3 to 8 inclusive, are needle diagrams illustrating the method of knitting the blank.

It may be well to state that in knitting a so-called full-fashioned stocking it is customary to commence the knitting at the widest portion of the leg, the knitting being performed upon flat machines having spring-beard needles and the strip being knitted of a uniform width until the calf portion is reached, whereupon the strip is narrowed by the transferring of stitches from the end needles on both sides of the machine toward the center of the fabric until the fabric has been sufficiently narrowed for the ankle portion of the stocking, the latter being then knitted of uniform width until the formation of the heel is necessary. At this juncture, two yarn guides are thrown into action, one employed for knitting a projecting heel piece at one side of the ankle web, and the other for knitting a corresponding heel piece at the opposite side of the ankle web, the intervening needles of the machine having the stitches cast from them.

The heel strips are knitted of uniform width down to the point where the rounding of the heel is to be effected, whereupon each of the strips is narrowed to the desired extent by transferring the stitches from needle to needle in the same manner as when narrowing for the calf portion of the stocking. When the knitting of the heel strips has been completed, they are cast from the needles and the selvaged inner edges of the heel strips are run upon the machine, known as a footing machine, the intermediate needles of this machine receiving the loops around the instep portion of the leg web which were thrown from the needles of the leg machine when the formation of the heel strips was begun. The foot web is then knitted upon the needles of the second machine, the web being narrowed at each side to form the desired instep gussets, and being also narrowed at the toe so as to properly round the same. This method of manufacture is a slow and tedious operation, necessitating the use of expensive machinery and the highest class of skilled labor to operate it.

The main aim of the present scheme has been to so form the stocking as to permit of the use, in its production, of a web produced by tubular knitting preferably upon a high speed circular or rotating machine in place of the usual low speed reciprocating machine, and to effect the desired shaping or fashioning of the web without the necessity of using transfer points for transferring stitches from needle to needle or filling-up points for transferring a previously formed stitch of the knitted web to a naked needle, for the use of such transfer or filling-up points further reduces the production of the machine, since the knitting operation must be arrested while such points are in operation.

Referring to Figs. 1 to 8 of the drawings, it will be observed that the stocking illustrated in Fig. 1, is very similar to an ordinary full-fashioned stocking, having a shaped calf, a square heel, with rounded lower corner, instep gussets, a seam across the front of the toe, a seam where the front of each heel strip is united to the rear end of the sole portion of the foot, and a seam extending from the point of the toe around underneath the foot and heel, up around the corner of the heel, and up along the back of the leg. In the improved stocking, however, the leg portion and the foot portion are not made separately, the stocking being produced from a web or blank of the character shown in Fig. 2, and this web being made in a manner which will be understood on reference to Figs. 3 to 8 inclusive.



It will be noted, on reference to Fig. 2, that the web has, at each edge, bordering wales which, when the web has been folded and seamed or sewed together to form the stocking, extend throughout the underside of the toe, the sole of the foot, and the rear of the heel, ankle, calf and leg of the stocking. The fashioning or shaping of the different parts of the stocking is effected by a widening operation, the vari-

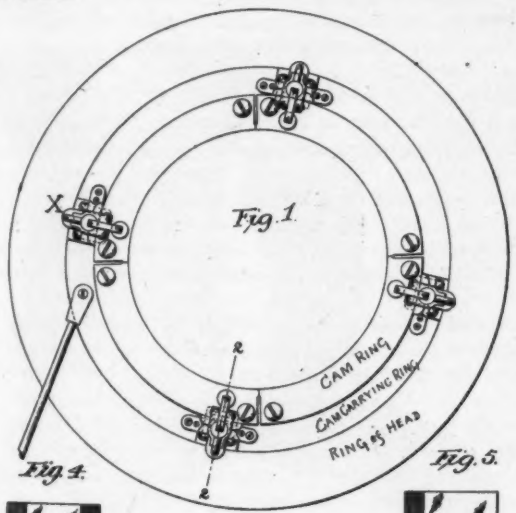
ous widening wales being introduced between the standing wales of the fabric and the bordering wales. The knitting of the web is commenced at the toe, and the machine employed for the production of the fabric is by preference a rotary machine with a pair of needle-carrying segments movable from and towards each other around a full or interrupted circle of needles in a cylinder, the latter needles (represented by the circular series of dots in Figs. 3 to 8), forming the standing wales and the widening wales of the fabric, and the segment needles (black dots) forming the bordering wales of the fabric.

The machine knits round and round, a limited portion only of the segment needles being in action at the beginning of the operation, and these needles being flanked by the bordering needles, the knitting yarn being carried across from one set of segment needles to the other, and the floating yarns or elongated sinker wales being subsequently severed or trimmed off, either by automatic means or by hand, with the result that, in either case, sinker wales or ends of yarn project from the bordering wales, as shown at X, in Fig. 2, hence a characteristic feature of the stocking or blank, is that the outer edges, along the bordering wales, are unselvaged.

In starting the knitting operation, only the cylinder needles from *a* to *a* Fig. 3, may be in operation so as to produce a narrow web such as shown at *a* in Fig. 2, with bordering wales at each side produced upon the segment needles. As the knitting proceeds, however, the segment needles are racked apart and cylinder needles are successively brought into action at each end of the set of needles *a—a* until the full amount of widening for the toe has been effected, as indicated in Fig. 2, by which time the relation of the segment needles to the cylinder needles will be that represented in Fig. 4, the cylinder needles from *b* to *b* being in action. The knitting of a web of uniform width for the foot of the stocking now proceeds until the point *d* is reached, whereupon there is a further introduction of cylinder needles and racking out of the segment needles for the purpose of producing the instep gussets, this widening operation proceeding until the web reaches the line *e*, Fig. 2, by which time the segment needles bear the relation to the cylinder needles shown in Fig. 5, the cylinder needles from *e* to *e* being in action. The needles from *c* to *c*, Fig. 5, are now put out of action but permitted to retain their stitches, and a few courses of stitches are knitted on each set of cylinder needles from *c* to *c* and on the segment needles, these courses of stitches, shown at *k* in Fig. 2, being spaced apart to the extent of the width of the set of needles *c—c* and being independent of each other, save only as they may be connected by the floating yarns or elongated sinker wales extending from strip to strip. The cylinder needles from d to e, Fig. 6, are then caused to cast their stitches, and the segment needles are racked into the position shown in Fig. 6, these segment needles also retaining their stitches. Knitting now takes place, therefore, only upon the cylinder needles from *c* to *d* and on the segment needles the result being the production of two webs or strips separated to the extent of the needles *c—c*, and disconnected except as above set forth. The spaced webs or strips thus produced are intended to constitute the heel of the stocking, and each strip is gradually widened by racking out the segment needles and bringing in needle after cylinder needle outside of *d* until the desired shaping of the web for the corner of the heel has been accomplished, say until the needles from *d* to *f* have been again brought into action as shown in Fig. 7. The knitting of spaced webs of uniform width then proceeds until strips of the desired length for the heel have been produced, whereupon the central or instep set of cylinder needles extending from *c* to *c*, is brought into action again and the knitting of web for the ankle portion of the stocking is proceeded with.

TO PRODUCE DIFFERENT KNITTING EFFECTS.

We illustrate a cam adjusting mechanism for knitting machines, the object of which is to provide an attachment which may be applied to existing machines for operating the needle or stitch cams and to produce different effects in the fabric.



By the use of this mechanism the manufacturer can build one line of machines which may be sent out to meet the requirements of one class of trade, and for supplying the demands of another class of trade it will be simply necessary for him to apply this attachment.

We have shown the attachment applied to a knitting machine of the circular type and also as applied to the cam ring or cylinder of such machine.

In the accompanying drawings,—Figure 1 is a plan view of the cam ring which ordinarily carries the cams for the cylinder needles, the attachment being shown in place in connection with the cam ring. Fig. 2 is a sectional view on the line 2—2 of Fig. 1. Fig. 3 is a front view of the attachment in place upon the cam ring. Fig. 4 represents in detail one of the cams as shown in Fig. 3. Fig. 5 is a plan view of one of the interchangeable cams adapted for use in connection with the attachment as shown at X Fig. 1. When the cam carrying ring *A* is moved in one direc-

tion it will cause the incline *B-C*, as the case may be, of the cam *D* to engage the contact point or pin respectively *E* or *F* with which the incline is adapted to co-operate and this will raise the post vertically through a bracket, thus causing the tilting of the rocker or lever on its pivot and forcing downwardly the post *G* with the stitch cam thereon to the predetermined position for securing the desired knitting effect in the fabric.

When the ring cam carrying ring is moved circumferentially in the opposite direction to its first position a spring will exert its force, elevate the post *G* and raise the stitch cam to its former position for at this time the cam *D* will have been moved to the point to withdraw its incline from contact with the pin or screw *B* or *C* as the case may be.

The upward movement or the upper position of the post *G* and the stitch cam is determined by an adjustable stop screw passing through a lug on the bracket of the attachment and being set in any position to which it is adjusted by a set nut.

It will be observed from Fig. 3 that the contact screws *E, F* may be adjusted to different elevations in relation to their co-operating inclines on the cam and thus a different adjustment of the needle cam will be secured when the cam carrying ring is moved in one direction from that when the ring is moved in the opposite direction, and furthermore, it will be understood that the cam inclines may be of different form and that the cam plates or blocks themselves may be removed and interchanged with blocks or cams of different form, so that a variety of different knitting effects may be secured by proper adjustment of the parts and by the use of proper cams. For instance, a slack welt may be produced by an adjustment derived through the operation of the incline *B* against the contact screw *E*, while a loose course will be produced by the operation of the incline *C* of the cam against the contact screw *F*.

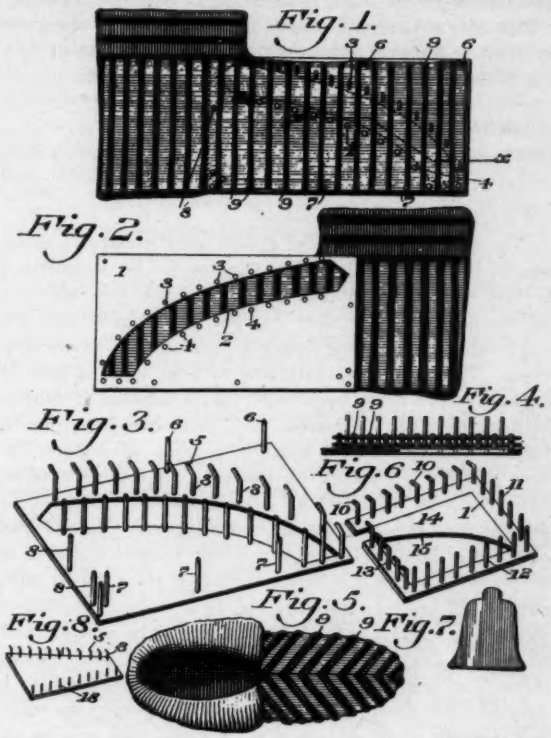
FOR HOLDING KNITTED FABRICS.

We show herewith a device for holding knitted fabrics while they are being united which consists in providing a series of engaging means for the fabric and guide for directing the work to the machine for uniting the fabrics.

Figure 1 represents a plan view of the device showing the fabric mounted thereon. Fig. 2 represents a rear plan view thereof. Fig. 3 represents a perspective view of the device. Fig. 4 represents a sectional view on line *x—x* Fig. 1. Fig. 5 represents a plan view of a slipper showing the same as completed. Fig. 6 represents a perspective view of a device showing a different form of guide. Fig. 7 represents a plan view of a still different form of guide which may be employed. Fig. 8 represents a perspective view of a support which may be employed.

The operation of the device is as follows: The foot portions of a knitted fabric, as for example, a slipper, as that is the form shown in the drawings, are placed side by side and the pins 3 and 4 are passed through the knitted fabric between the raised stitches 9, as will best be understood from Figs. 1 and 4, the portion of the knitted fabric between the pins 3 and 4 being stretched a suitable amount. Other portions of the knitted fabric are then passed upon the pins 6, 7 and 8, in order that the entire fabric may be firmly held. The device is then placed in a suitable position on a sewing machine which is adapted for operation thereon, and the needle is directed, or can be guided, by the operator on a curved line substantially midway between the sets of pins 3—3, 4—4, whereby that portion of the knitted fabric will be sewed together.

After this the fabric is removed from the device or support and the extra portion of the material can be cut away after which the slipper is turned with the proper side thereof out and the material is ready to be



secured to the sole, it being understood that before the knitted fabric is mounted upon the device or support, it is turned inside out so that the stitches in the completed article will not show, as will be understood from Fig. 5.

It will be further understood that in this manner the stitches 9 will meet at the proper point seen in Fig. 5 forming a neat and attractive appearance and accomplishing the result in a quick and expeditious manner. In the form shown in Fig. 6 there has been mounted upon the frame 1 a series of pins 10, 11, 12 and 13, forming a rectangle, the pins on opposite sides being preferably parallel, as will be evident from Fig. 6, and there has been provided a removable guide piece 14 which is placed within the square formed by the plate 1 and which guide in Fig. 6, is provided with the curved edge 15, in order that the operator can direct the needle in proper line.

In Fig. 7 is shown a different form of guide which can be used in place of the guide 14 and which can be followed by the operator of the machine in sewing the fabric, it being understood that any desired form of guide can be employed that may be necessary.

In Fig 8 is shown a form of plate which may be used, in which the edge of the plate is suitably inclined to form the guide for the needle and the plate is provided with the pins 3 having bent ends 5, the pins being adjacent the guides and the plate being further provided with the pins 18 upon which and the pins 3 the material can be stretched in order that it can be held in proper position for sewing.

DYEING, BLEACHING AND FINISHING

MERCERISING.

THE CAUSTIC SODA BATH SHOULD BE AT 60 TO 70 DEGREES. THE SILKY LUSTER DEPENDS ON THE STRETCH WHILE IN THE CAUSTIC SOLUTION. THE TEMPERATURE OF BATH SHOULD BE NO HIGHER THAN 60 DEGREES. MERCERISING RANGE FOR CLOTH.

BY H. R. CARTER.

(Concluded from August.)

The mercerising action of caustic soda is rather a rapid one, as it requires only a few minutes for its completion; in fact it appears to take place simultaneously with the impregnation of the fiber by the liquid and that the lengthening of the time does not increase the mercerising effect. The caustic soda bath must be kept up to at least 60 degrees Tw. or it has been found that a solution of density between 60 and 70 degrees Tw. gives the best results. Caustic soda solution of less density than 15 degrees Tw. have scarcely any action on cotton. The maximum effect appears to be produced by a concentration of about 60 degrees Tw., although the difference between this and that obtained at 50 degrees Tw. is not very marked and even at 40 degrees Tw. the mercerising action of the alkali is quite strong. In order to maintain the bath at its most efficient strength, a solution at 70 degrees Tw. must be kept at hand, so that, as the bath gets weaker with the wet yarn passing through or working in it, it may be strengthened up, as is found by frequent testing to be necessary to keep the working strength at 60 degrees Tw. Caustic soda can be obtained in solution of the strength required or solid in cake; two pounds, six ounces of the latter will make about one gallon of solution at 60 degrees Tw.

The thread of yarn should be kept at one tension throughout and so spread out that one thread is no tighter than another. The secret of obtaining a silky luster on cotton yarn is keeping it well on the stretch while in the caustic soda. It should have the same length after mercerising as in the gray and must not be shorter, although it may be two per cent. longer without injury. The tension is so great when the yarn has got well wetted out in the caustic soda, that the bearings must be strong and long. Without this tension, the yarn would contract 25 per cent. To obtain like results as regarding luster, the time which the tanks remain in the caustic soda bath must be always the same and all parts of the yarn must be wetted or impregnated alike.

The temperature of the bath must be kept always the same. The colder the better, say, 60 degrees F. and no higher. If there is any difficulty in keeping it down, ice must be used so that it is the same all the year round, thus always producing a uniform result.

The yarn must be kept at high tension until the liquor has been washed out, as a good deal of caustic soda is carried away from the bath. The yarn should be washed, first, with a little water, which can be used for making up a new solution of caustic soda. A good wash with cold water follows, taking care that the threads do not get entangled. If any soda is left in the fiber it will cause further shrinkage and the yarn will lose some of its luster and be streaky when dyed.

An acid bath or scouring off and then a thorough washing sometimes follows mercerising, but such is not required if the yarn is to be bleached immediately or dyed with such colors as benzo purpurines.

The general principle of hank mercerising holds good for mercerising cloth.

In mercerising cloth, the material may be taken directly from the singeing room or it may be scoured or half bleached before going through the mercerising range. The latter course is to be recommended because in the gray the cloth contains a certain amount of size, which has a tendency to neutralize the caustic soda, and in any case raises the temperature considerably owing to chemical action and necessitates artificial cooling.

When treated in the gray state, extra caustic soda is required to keep the bath at its proper degree of strength, which is more expensive than first scouring to remove the size. The latter system also ensures a more uniform finish to the goods after they have been dyed.

The mercerising range for cloth comprises the following elements:

A padding or impregnating machine in which the cloth is immersed in the caustic soda bath in a loose state. The machine is provided with three cast iron squeezing rollers about twelve inches in diameter, two of which are covered with India rubber. The pressure upon the rollers, which are adjustable, is applied by means of compound levers. Under the squeezing rollers is the wrought iron basin which contains the caustic soda lye and is fitted with four guide rollers and double bottom for cooling by means of ice or water. Expanders are provided at the feed end.

Next comes the stentering machine which takes the cloth directly from the nip rollers of the padding machine. It is sometimes made with a starting trough for the immersion of the cloth. Other machines are provided with perforated water tubes, above and below, supplied with water by centrifugal pumps, the water being again collected and used. The cloth is stretched by ordinary clip or pin chains, the length from center to center of the clip chain wheels being from 50 to 70 feet. Self-feeding clips, which should be nickled, are generally used. At the outlet end of the stentering machine there is a pair of cast iron squeezing rollers, the upper one rubber covered and pressed by compound lever pressure.

The cloth then passes to the neutralizing trough in which it is washed. It is made with three, four or five holes or chambers. Each chamber is provided with one set of squeezing rollers. The cloth in passing through this machine is opened to its full width and then passed on to the drying cylinders or cams usually 24 in number, arranged in two rows and of a width to suit the cloth. A plaiting down apparatus of the ordinary kind is provided at the outlet end.

Some continental mercerisers prefer to impregnate the cloth with lye on a separate padding machine and then allow the cloth to remain rolled on its beam for some time. By this means they consider that the lye has more time to

work on the fiber. They then pass the cloth to the stentering machine.

A padding machine to carry out this idea may have two bowls of which the lower is rubber covered. The cloth is twice impregnated in one passage through the machine and also twice squeezed out, the first time by a side roller, and the second time between the bowls. The speed of such a machine is about 45 yards per minute. The trough of the machine is movable so that the attendant can thread the cloth under the guide rollers without dipping his hands into the solution. An arrangement is provided for lowering the heavy cloth beams.

In a mercerising range, in which washing off is done by means of sprinkler pipes, the cloth should be supported in the stentering machine by revolving nickeld rollers.

The water which has been used for sprinkling in the mercerising range, or for the first washing of hanks in the hank mercerising machine, contains lye from 6 to 7 degrees Tw. In order to utilize such lye completely, apparatus of various systems are constructed for the purpose of again concentrating the lye to 30 or 50 degrees in order to enable one to again use it for mercerising. Some systems are based on the concentration of the lye by the use of multiple expansion of steam during heating and even on the use of some exhaust steam, but as a rule all such systems are too costly. For that reason such apparatus have not been generally adopted by mercerisers who can generally find a way to utilize at least part of the diluted lye from the mercerising machine in bleaching and boiling.

A simple and cheap plan which has been proposed is to fit an ordinary steam boiler with iron boiler fittings instead of brass and to feed it with weak soda lye instead of water using the steam produced for boiling or other purposes. The lye concentrated in the boiler can be removed by means of the mud cock, for instance, while the boiler is working as required, after that it has reached a sufficient degre of concentration.

LINEN FINISH ON COTTON

A mixing which will give to cotton the appearance of linen can be prepared from the following recipe. It is applied to bleached material:

Wheat starch	4 lb.
British gum	4 lb.
Carrageen mucilage	2 lb.
Talc or other white mineral	1 lb.
Linseed oil	½ lb.

These ingredients are boiled for a quarter of an hour in 10 gallons of water. The dressing is used lukewarm.

Mixings are best made in a wooden vat provided with a steam coil and stirrer. All the metallic parts should be copper, as iron is apt to rust, when flakes of rust scale off and get into the size, thereby causing rust stains on the goods. The blades of the stirrer should be of wood, maple or beech for choice. It is a good plan to graduate the inside of the vat in 10 gallons. This is done by pouring in measured quantities, each of ten gallons, and marking the successive levels. The marking should be done by branding with a red-hot iron.

Whenever inorganic salts form part of a dressing they must always be dissolved in the water before any starch or other organic matter is put in. This rule holds whether the salts are soluble, as the sulphates of zinc, magnesium or soda, and the chlorides of magnesium and barium; or insoluble, as the sulphates of lead and barium, China clay, chalk and gypsum. When they are in, put the stirrer in motion and put in the starches. The next step is to heat up, and when the mass is fairly hot, a portion of it is removed, mixed with the softening agents, such as grease, soap, Turkey-red oil, wax, sugar, &c., &c., and returned to the contents of the vat at about the boiling point.

Antiseptics may be required in hot water. Among these we can recommend borax, alum, salicylic acid, camphor, zinc sulphate, but, best of all, zinc chloride. Tannin, phenol, creosote, oxalic acid, and arsenic compounds are bodies of questionable efficiency.

As regards starches, it will be found that rice starch gives a harder finish than wheat starch, and wheat starch than potato starch.—*Deutsche Farber Zeitung.*

ABSORBENT COTTON.

Cotton fiber, after treatment by the processes of picking and carding when made into absorbent cotton passes through a series of chemical and mechanical operations, the principal ones being as follows:

CHEMICAL PROCESSES.

1. The cotton fiber, mechanically cleaned, is packed in boilers and washed with water, preparatory to chemical treatment.
2. Alkaline hydrolysis.—In this process the non-cellulose constituents of the fiber, wax, fat oils, pectose, etc., are hydrolized to products soluble in alkaline liquids.
3. Extraction of alkali and hydrolized products.
4. Carding.—Fibers individually separated and formed of the alkaline treatment, and oxidation of the coloring matter of the raw fibers (the first stage of bleaching).
5. Extraction of oxidizing chemicals.
6. Acid oxidation.—A completion of the oxidization and bleaching action of the foregoing process.
7. Extraction of acids and acid products.
8. Second alkaline hydrolysis.
9. Extraction of alkaline products.
10. Second acid oxidation (completion of bleaching).
11. Neutralization of chemicals and removal of neutralization salts.
12. Hydro extraction.

MECHANICAL PROCESSES.

1. Opening. The fiber at this point is bleached and absorbent, but somewhat matted and tangled and must be opened for subsequent operations.
2. Drying (temperature 220).
3. Lapping.—Gathered into sheets preparatory to carding.
4. Carding.—Fibers individually separated and formed into thin films, the films gathered into layers.
5. Rolling in layers with tissue paper between each layer.
6. Cutting.—Rolls cut into sizes,—pound, half-pound, quarter-pound, ounce, etc.
7. Packing into cartons.
8. Sterilization.
9. Bacteriological tests.

Originally linters were much longer than they are today, owing to improved gins and ginning.

DYEING ANILINE BLACK.

The Violet Matter Is a Mauveine.

The red, or, more correctly speaking, the violet-red, coloring matter, which is observed in soaping or washing aniline black, is indeed a mauveine. It can easily be obtained by extracting aniline black dyed color (it is immaterial whether it be a single bath, aged, or steam black) with alcohol, or, better still, in water acidulated with hydrochloric acid. On evaporating to dryness the aqueous extract, the hydrochloride of the pseudo-mauveine remains as a blackish-green mass with a bronzy reflex, readily soluble in alcohol, with a reddish-violet color. In concentrated sulphuric acid the dyestuff dissolves with a dirty-green color, which passes on diluting through blue to violet.

Reduction with zinc dust and ammonia yields a colorless solution, which at once becomes violet again on exposure to the air. From the solution of the coloring matter caustic soda throws down a light violet precipitate. On cotton, nitric acid changes the violet to yellowish green. Lastly, the hydrochloride yields with platinum chloride a yellow double salt.

These reactions, as also the properties of the shades obtained on cotton, wool, and silk, leave no room for doubting that the violet dyestuff is a mauveine, and that it corresponds to pseudo-mauveine. Having thus ascertained the chemical nature of the red-violet by-product, the two further questions as to its formation in the aniline black process and the best means for preventing this are now readily answered.

Pseudo-mauveine is formed, according to Perkin, by the action of various oxidising agents, especially chromine acid, on aniline. Now, aniline is always present in smaller or larger amount in the cotton after the oxidation has gone so far as the green stage.

This unoxidised aniline yields pseudo-mauveine on chroming. It should therefore be possible to prevent the formation of the mauveine by well washing the greened cotton before chroming, as is sometimes practised in the dyeing of half-silk ribbons. This mode of procedure is, however, generally impracticable, as the black would turn out too thin, uneven, and too liable to green. But, even if this procedure be adopted, a black is obtained which, though containing less pseudo-mauveine than the cotton which has not been washed, nevertheless is found to contain a small amount of violet. It is thus proved that it is also formed from the oxidation product of aniline which has been fixed on the fiber (*i.e.*, from emeraldine), and chromic acid.

The latter oxidising agent is not even necessary, since the greened cotton, after washing, also yields a small amount of pseudo-mauveine to water or prolonged boiling. The formation of this small amount of violet dyestuff can not therefore be prevented in dyeing or printing. But the bulk of the dyestuff which is formed from the unchanged aniline salt in the fiber in the chroming process can be reduced to a minimum by converting in the first place as much aniline salt as possible into emeraldine in the ageing process, and, secondly, by observing certain precautions in the chroming. All other factors which might come into consideration, such as the acidity or basicity of the aniline black liquor, or the amounts of ingredients other than sodium chlorate and bichromate, have no influence on the formation of the pseudo-mauveine.

In order to comply with the first condition, viz., to convert as much aniline salt as possible into green emeraldine, it is only necessary to raise the amount of chlorate in the black padding liquor, and to age at a high temperature. It is, however, well known to every practical man that these two deviations incur considerable risk in tendering the cotton fiber. In practice, therefore, the theoretical amount of sodium chlorate (93 parts aniline require 35.5 parts of sodium chlorate for the formation of aniline black) is seldom exceeded, and, if it is, complaints of tendered goods are made.

With regard to the amount of chlorate there is therefore a limit which is represented by 32 parts to 33 parts of sodium chlorate to 93 parts of aniline. There is also a limit to the temperature employed in ageing, which should not exceed 55 deg. C. The employment of a temperature higher than this is less liable to do harm than the use of too much chlorate, providing the noxious hydrochloric fumes and the oxides of chlorine are efficiently drawn off from the chamber. But even where these limits are used a considerable amount of pseudo-mauveine is formed.

It is only by regulating the chroming process that it is possible to reduce the formation of mauveine to a minimum. The amount of bichromate employed is here of prime importance, temperature, duration of treatment, and acidity of the bath being of secondary importance only. It is a common practice to use 22 to 25 grms. of bichromate of soda per litre when a short bath is used. When such large quantities are used, the resulting black contains a considerable amount of pseudo-mauveine. If the amount of bichromate is reduced to 5 to 10 grms. per litre an almost pure aniline black results, only traces of mauveine being formed. In spite of such a small amount of bichromate being used, the resulting black fulfills all demands with regard to shade, depth, non-greening, etc. By chroming in a long bath somewhat different results are obtained.

It is true that the mauveine formation diminishes the longer the bath is used, but the black obtained lacks the characteristics of a good aniline black, viz., depth, evenness, non-greening, and thus any advantages that a long chroming bath may show in respect to preventing formation of pseudo-mauveine are counter-balanced by these drawbacks.

As a rule the chrome bath is kept acid, but with steam-black it is sometimes used alkaline (by addition of soda). In this case a duller violet is formed, in somewhat smaller quantity, which belongs, according to its reactions, to the mauveine dyestuffs.

It has thus been shown that the red-violet by-product which is formed along with aniline black is pseudo-mauveine, and that this is formed chiefly from the analine salt present on the greened cotton in an unchanged condition, but also to a certain extent from emeraldine.

Of all the factors in question, the amounts of chlorate of soda and bichromate, especially the latter, have the determining influence on the formation of pseudo-mauveine. —*Dr. Bottinger in Journal of the Society of Dyers and Colorists.*

The cotton now known as linters is a by-product of the cottonseed oil business, and consists of all of the lint cleaned from the seed after ginning, which is of too short a staple for spinning.

Linters are the short cotton fiber which remain on the cottonseed after ginning, and are subsequently removed.

SULPHUR DYES RIVAL CUTCH.

No Complicated Dyeing Process. Shades of Fastness Are Produced. Can Be Got in a Single Bath.

Although the substantive dyes have been unable to compete with cutch, the sulphur dyes rival it successfully.

It is true that there is a large range of brown substantive dyes of satisfactory fastness, but such careful dyeing is required in order to obtain the greatest possible fastness with these dyes that most dyers familiar with the simpler methods of cutch dyeing still prefer the natural dyestuff. Even when the best substantive dyes are employed, they have not the necessary resistance to washing and light unless the dyeings are after treated by diazotising or coupling according to circumstances, or by after-treatment with bichrome or copper or both. Now, the sulphur dyes avoid all these difficulties. The brown sulphur dyes can be used without any complicated dyeing processes, and give shades of a fastness which is amply sufficient.

As is well known, the sulphur dyes have to be used with sodium sulphide, which acts both as a solvent and as a reducing agent, and therefore the dyeing depends largely on atmospheric oxidation. Not only do the brown sulphur dyes give better results without after-treatment than the substantive coloring matter, but their fastness can be still further increased by similar after-treatment. At the same time this after-treatment can be carried out in weaker baths, say of bichromate, sulphate of copper, and formic or acetic acid, and in less time than is required for the after-treatment of goods dyed with substantive coal-tar colors. Hence an extraordinary degree of fastness can be secured with the sulphur dyes with less expenditure of time, fixing material and steam, than is necessary to obtain a fastness equal to that of the sulphur dyes without any after-treatment whatever when direct cotton dyestuffs are used.

The browns got with sulphur dyes are fully equal in shade and fullness to anything that can be obtained with cutch. Sulphur brown dyeings are, nevertheless, inferior to cutch dyeings in one respect, and that is the usual lack of resistance to chlorine. Even here no great obstacle to the use of the sulphur dyes presents itself. Chloring simply gives a yellow shade to the sulphur brown, and this can be readily provided for in cases where it is known that chloring has to follow, by introducing a correcting dye resistant to chlorine, and of this only a small amount will be required.

All shades of brown can be got in a single bath with sulphur dyes, and it is rarely necessary to shade with basic dyes. The dyeings are also remarkable for their level character, and the process requires very little supervision.

There is yet another advantage on the side of the sulphur brown. Goods dyed with cutch have generally a harsh handle, which must be corrected. Now, this difficulty is entirely absent when brown sulphur dyes are used. Habit has accustomed people to the cutch handle, and from being at first regarded as an unavoidable evil, it has come to be demanded in many cases. This attitude, however, will disappear in time before the manifold advantages of the sulphur dyes in the matter of appearance and fastness. If a harsh feel is imperatively wanted, together with the superior results obtainable by using the sulphur dyes, every dyer knows how to produce it on goods dyed with no matter what dye has been employed. An alum bath containing 4 pounds of alum for every 100 pounds of goods is quite sufficient. The goods are worked in it for from 10 to 15 minutes at about 150 degrees F.

The fact that cutch dyed goods come out heavier after dyeing, while brown sulphur goods do not, must not be forgotten. There are customers, unfortunately, who think that they ought to get a greater weight from the dyer than they sent, and who are even ready to pardon faults in dyeing, provided they have more to sell after the dyeing. When dealing with these customers, however, nothing is easier than to weigh goods dyed with brown sulphur dyes with barium chloride and magnesium sulphate. The weighting bath should contain about 6 pounds of the selected weighter per ten gallons. The extra trouble and expense so incurred is, of course, a drawback, but it diminishes very slightly the advantage secured by the use of sulphur dyes as substitutes for cutch.—*The Dyer and Calico Printer.*

THE OLD DUNGING PROCESS.

In the madder style of calico printing the old process of dunging for the final fixation of the mordant on the fabric is still pursued if the finest results are expected to be obtained; and though many substitutes have been brought out for cow-dung, that was formerly exclusively used, the latter has not been wholly replaced, and consequently a certain portion of this dung is nearly always used in the process of dunging.

At the present time arseniate of soda is used to a considerable extent as a substitute for cow-dung, and the method most in use is to pass the cloth through three preparations in a continuous manner, the last two being charged with a good proportion of cow-dung.

It is not known exactly at what period or for what object this product of nature was first used in calico printing, and it is very probable that it was the use of sheep-dung in dyeing turkey red that suggested the idea of animalising cotton, as it was at one time named, to render it more fit to attract coloring matters, but whatever may have been the motive of its introduction into dyehouses and printworks, it constituted a great step towards progress.

It appears to have been employed in the Swiss printworks about the middle of the eighteenth century, but it was not until 1790 that it began to be turned to account in France, and if it was known before then in England its application was not a general practice based on anything like scientific principles.

About the middle of the nineteenth century dung emulsion was superseded to some extent by a solution of a mixture of phosphate of soda and phosphate of lime, for the preparation of which a patent was obtained by John Mercer, as well as by one Mr. Prince. This mixture, or at least the phosphate of soda dung with other substances, is still in use in some of the best printworks in the world.

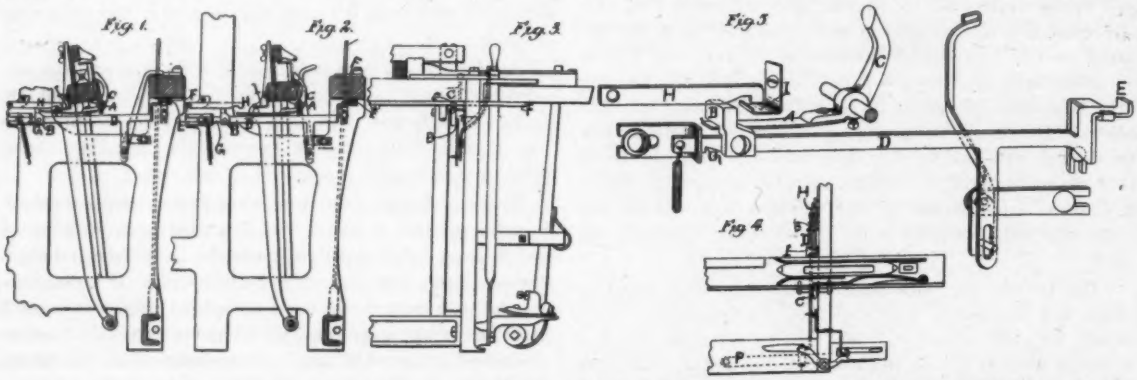
The important part which cow-dung plays in the fixation of mordants has long been a study among chemists for establishing a theory of its operation, which has, however, on the whole been somewhat abstruse, some supposing that it is capable of neutralising and completely precipitating the oxides which serve as bases to the mordants, while others have attributed its principal effects to the action which the fixed organic matters exert on the solutions of the metals. —*Textile Recorder.*

AUTOMATIC STOP MECHANISM FOR LOOMS.

Elmer E. Lovering and Joseph A. Pelletier, Dracut, Mass., have invented an automatic stop mechanism for looms which we herewith illustrate; that has for its object to provide simple and effective means for preventing a breakout in the warp threads in a loom, in case the shuttle remains in the shuttle-box at either end of its throw from any cause, such as breakage or derangement of the lug strap, picker strap or other part of the loom.

The invention is embodied in an operating device on the lay of a loom, and adapted to be held in its operative position only when a shuttle is present in the shuttle-box.

Of the accompanying drawings,—Figure 1 represents a sectional elevation of that portion of a loom which includes the lay and adjacent parts, equipped with an embodiment of the device held in its operative position by a shuttle in the shuttle-box. Fig. 2 represents a view similar to Fig.1, showing the operating member in its inoperative position, which it normally assumes when the shuttle is out of the shuttle-box. Fig. 3 represents a front elevation showing the portion of the loom which contains the device illustrated in Figs. 1 and 2. Fig. 4 represents a top view of the portion of the loom shown in Fig. 3. Fig. 5 represents a perspective view, showing the device operatively assembled.



The operation of the parts is as follows: It will be understood that the shuttle is thrown from its position at rest in the shuttle-box before the lay reaches the extreme of its backward movement, and that when the shuttle has been properly thrown, the extension *A* of the operating member will be depressed when the lay reaches the extreme of its beating-up movement, so that this extension will not contact with the lug *B*. It will also be seen by reference to Fig. 1 that if a shuttle remains overtime in the shuttle-box, the arm *C* and extension *A* will remain displaced until the conclusion of the backward movement of the lay, so that the extension will encounter the lug when the lay approaches the extreme of its backward movement, and will, therefore, cause a movement of the slide *D*. This movement of the slide will cause the lug *E* to move the knock-off lever *F* sufficiently to release the shipper lever and shift the driving belt from the usual fast pulley which it engages when running the loom, to the usual loose pulley which is engaged by the belt when the loom is not running. It will also be seen that the described movement of the slide *D* will bring the notch G therein into a bracket, so that the slide *D* will be permitted to drop a distance equal to the depth of the notch when the notch enters the bracket. This dropping of the slide causes the detent member *H*, which rests upon a lug, to drop correspondingly.

This dropping of the detent member *H* takes place just as the lay reaches its back center, so that this member engages the member *I* on the lay, thus locking the lay and preventing its return movement. When the loom has been thus automatically stopped, movement of the shipper lever to position to start the loom is prevented by certain means, until the stopping mechanism has been properly adjusted or set for operation.

TRUEING THE FLEXIBLES

If the flexible bend had to remain always in the same position, it would not be difficult to make it perfectly concentric with the cylinder. Its diameter must however be reduced from time to time, according as the wire is ground away on the cylinder and flats.

The makers of the Hetherington revolving flat card claim that their flexibles show no measurable deflection until the diameter has been reduced far beyond the limits necessary in practice. Their flexibles are cast and turned larger than required for new wire, and are screwed in their places on the card. By means of the adjusting screws the diameter is then reduced till they stand just a little higher than necessary for new wire. The object of this is to render the metal more homogenous throughout the length of the bend and thus remove any weak places, and to render the bend stiffer and more capable of resisting the weight of the flats and the pressure of the chain thereon. While the bend is in this state of tension a machine is fixed on the cylinder carrying a milling cutter at each end, which passes over the bends from one end to the other, milling them from the cylinder, so that they are absolutely concentric with it. The flexible bends being already in tension may be further reduced in diameter within the limits required by the wire, without the slightest deviation from the perfect circle taking place.

Another advantage claimed as resulting from this system of trueing up the flexibles, is that the milling cutters are both carried on the same shaft which can be easily set parallel to the cylinder in the direction of its width, so that the surfaces of the two bends are both in the same line, and perfectly parallel with the surface of the cylinder in the direction of its width, and no twist remains in the bends; consequently the bearing surfaces of the flats lie on the full width of the flexibles from end to end. The wearing of both the bends and the flat ends is thus reduced to a minimum and equalized.

A further advantage claimed for this system is that, if

rendered necessary through unusual wear or accident, the operation of trueing up the bends may be repeated at any subsequent time in the mill, and this without removing the clothing from the cylinder.

COMBING DEVICE FOR COTTON.

The accompanying illustrations relate to the Heilmann type of machines for combing cotton fibers, designed to simplify the construction of certain parts of this type, and to obtain more efficient working of the machine.

The present plan consists essentially in a mechanism for effecting the working, that is the raising and lowering of the top detaching rollers direct from the nipper shaft, comprising a combination of suitable levers connected therewith and in dispensing with the separate cams and levers hitherto employed for the purpose.

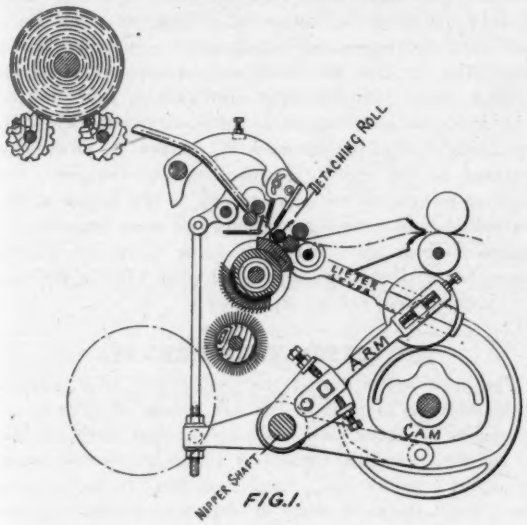


FIG.1.

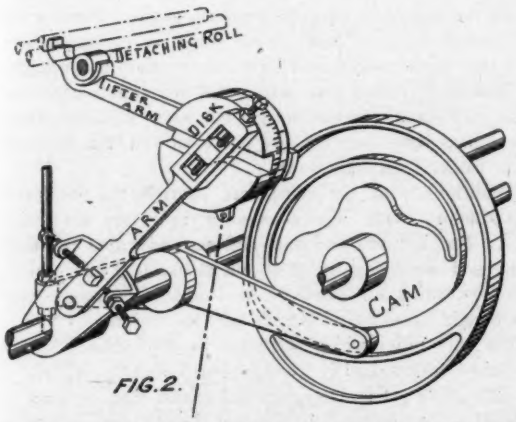


FIG.2.

Figure 1 is a traverse sectional elevation of the operative parts of the comber, and Fig. 2 is a perspective view of the parts comprising the scheme.

One cam shaft and the cams thereon and the levers hitherto employed for raising and lowering the top detaching roller are dispensed with. The nipper shaft, the cam for actuating it, and the cam lever are constructed as heretofore. To the nipper shaft there is affixed (one for each pair of combing heads) an arm or lever which oscillates with the shaft and is capable of adjustment. The position of the arm relatively to the shaft is adjusted to a limited extent in either direction by set screws as shown.

The arm on the nipper shaft is adjustably connected with a lifter lever mounted upon a shaft which is journaled in bearings in the usual way, so that the movement given to the arm by the nipper shaft is transmitted to the lifter lever. and the detaching roller. The lifter lever at its upper end carries the top detaching roller and as it is oscillated by the arm the detaching roll roller is moved to and from the cylinder. By altering the position of the part of the disk carrying the groove relatively to the arm the duration of the dwell of the top detaching roller upon the fluted segment of the cylinder can be regulated either longer or shorter. To the lower end of the lifting lever or to the disk a band or chain is attached passing over a pulley to support a weight, the weight being such as to balance the detaching rollers, being about equal to that applied to the rollers.

By this construction one is able to regulate or control the duration of the dwell of the top detaching roller upon the fluted segment to suit any class of cotton or obtain any desired percentage of waste, also there is said to be obtained much better piecings and lighter running of the machine, the evenness and strength of yarn being greatly improved.

PERPETUATION OF OUR FORESTS.

The Appalachian National Forest Association is a purely voluntary body, maintaining national executive headquarters in Washington, D. C., with an advisory organization of vice-presidents and state boards in each of the Southern States, with a membership at present largely made up of Southern men. Its object is to promote the perpetuation, through wise use, of the remaining forests of our country.

By an extension of the national forests, and especially through the establishment by the national government of the important Southern Appalachian and White Mountain forest area, and by urging the establishment and multiplication of State forests in the several States, which State work comprises also the education of the individual owner of forest lands, the revision of tax laws where necessary, enforcement of fire laws, etc.

The object is one of the highest economic importance to the South and to the nation. The association has in the past few months been conducting a campaign of education in the South on the lines mentioned.

To accomplish the large work that lies before it the association plans the obtaining of an active and aggressive membership made up of the various boards of trade or chambers of commerce, civic leagues, city improvement clubs, women's clubs, industrial associations, social clubs, and other organized public and semi-public bodies in each important city as an aid to the national work, as well as a large active membership made up of corporations, owners of wood lands, lumbermen, railroad men, engineers, wood users, power companies, manufacturers and individuals.

To obtain this membership, the association proposes to conduct a lecture tour throughout the country and a systematic educational and publicity campaign.

Hard waste is composed of cop buttons, ring-frame waste, etc., which has been cleaned, opened, and broken up as for spinning.

MARKET REVIEWS.

REVIEW OF THE COTTON MARKET.

Prepared Especially for Cotton
by H. & B. Beer, New Orleans.

Last season opened with middling cotton in the New Orleans market quoted at 13 9-16 cents compared with 9 1-8 cents per pound at close of the season, a difference against the South of $22.20 per bale. Why such conditions should prevail at the end of a season when the American crop was only 11,572,000 bales, and actual consumption 11,885,000 bales is easy to explain. There were many reasons. Foremost among them was the stand taken by the government against corporations, for while the wheels of commerce the world over were busy as they never were before, a political move against the trusts was so far reaching as to shake confidence in the future to its very foundation. Liquidation was the order of the day and it never ceased until values were thrown to the winds, not only in America, but throughout the world, and instead of trade expanding, the policy of retrenchment was quickly pursued. Money rates soared in Wall street, and the Bank of England's minimum discount rate rose to 7 per cent., the highest figure since 1873, or for 35 years, and was held at that level from November 1907 until June 1908. Under such conditions there is no product that feels so quickly the pulse of public opinion and the want of confidence as cotton, and its markets having been deprived of outside support by the making of anti-future laws in nearly all of the Southern States, prices gradually melted away for want of public assistance. By these as well as by many other so-called laws of reform, business has suffered severely, and we are afraid the end is not yet in sight. The great shrinkage in values of all descriptions forced economy on the captains of industry, and they, by force of circumstances, were obliged to reduce wages from 10 to 25 per cent., and such cuts in the income of the masses was so sudden and so universal that they restricted the purchasing power of the people and affected trade to such an extent as to cause ever so many manufacturing establishments to cease operations entirely, and the result was that the country was virtually transformed into a camp of unemployed.

In America, conditions are improving slowly, and it will be sometime before affairs assume their normal state, but in Europe, especially in England, the outlook could hardly be worse, for it was only at the opening of the current week that London reported 50 per cent. of the artisan class out of work, and since then the great strike of the Manchester cotton mill operatives has been declared, involving about 140,000 hands and tieing up some 500 mills or more, or about 40,000,000 spindles out of Great Britain's accredited 52,000,000. This is, indeed, a very unfavorable state of affairs, and no quarter of the globe will suffer more than the cotton states of America, and all this trouble is traced to political potentates interfering in commercial affairs.

Had not confidence been destroyed by the war on corporations and by the many political moves made for reform last year, there is no telling how high a price last season's short crop might have sold at. As a matter of fact the season closed with prices the lowest, with but one exception, since 1902.

According to official reports European mill stocks of American cotton, August 31, 1908, were the largest on record,—1,350,000 against 1,212,000 last year and 839,000 year before last,—and the world's visible and invisible supply of American cotton on same date was only 293,000 less than in 1907, and was 585,000 larger than in 1906—2,639,000 compared with 2,932,000 and 2,054,000. On the other hand the growing crop promises a large yield, or say about 1,000,000 bales more than last year. Foreign crops also hold out every indication of making as much more cotton than last season as will America. In other words probabilities are that the world will produce of all kinds of cotton about 2,500,000 bales more than in 1907, and as trade and political conditions are unfavorable in the United States, and as business in textiles is practically paralyzed in the United Kingdom and in Germany, the future of cotton, we are sorry to say, is not bright at all. Less politics and reform movements and more conservative business methods would probably bring about the desired change, but until such a policy is adopted, little in the way of an improvement can be expected.

THE COTTON YARN MARKET.

The yarn prices during the past month have declined considerably on account of the willingness of mills to accept prices for stock yarn, and orders to run their machinery for their immediate wants at values which they would not accept a month ago. Some have been forced to liquidate through the need of money, others have made up their minds that there is to be no immediate improvement for the rest of the year and have determined to sell. Other mills have needed work to keep going along on certain orders which they have booked, and have taken orders accordingly. The decline in cotton has helped out somewhat, but most of the mills claim they can not get out whole at these prices, while others state they can get out even and will continue to run rather than shut down.

Conditions with the consumers continue in the same unsatisfactory way. The consuming mills are not using yarns. The knitters can not get any advances on their goods, and are using up their old stocks and are placing very few orders for goods to be made. Underwear mills have bought some round lots at very low prices.

The only relief which can come to the industry now is low priced cotton, and if this could be bought at 8 cents so the mills could get their supply and enable them to start up it would, in our opinion, be the best thing which could happen, not only for the raw material but also for the manufactured product. In the first place it would enable the farmer to sell a certain amount, and if he wished he could hold the balance. It would enable the mills to start their spindles by accepting business now pending on account of the price, and as soon as the mills got started it would create a further demand for cotton which would benefit the farmer, and the mills would also benefit from renewed orders which they would receive on an advancing market.

The prices of hosiery yarns are governed by big East-

ern mule spinners who are selling 10's on a basis of 16 cents through their agents, and while these offers continue it will be difficult to get the same price for Southern yarn.

Prices from now on will be governed by supply and demand, and until the stock is used up and manufacturers able to get orders for their own goods, which will enable them to pay prices for yarns, it will be difficult to provide work for the idle spindles. There have been some orders placed with spinners higher than quotations, but these are orders booked sometime ago, which the mills would not accept then, but which the houses are now placing among spinners on a profitable basis for themselves.

We quote as follows:

SOUTHERN SINGLE SKEINS.

4s to 8s	14@14½	22s	16
10s to 12s	14½@15	26s	17
14s to 16s	15 @15½	30s	18
20s	16		

SOUTHERN TWO-PLY SKEINS.

4s to 8s	14½	30s	19@19½
10s to 12s	15@15½	36s	22@24
14s	15½	40s	23@25
16s	15½@16	50s	30
20s	16 @16½	60s	38
24s	17 @17½	3-ply 8s upholstery	15
26s	18	4-ply 9s upholstery	15

SOUTHERN SINGLE WARPS.

8s to 10s	14½@15	22s	16½
12s	15 @15½	26s	17½
14s	15½	30s	18½
16s	15¾	40s	23@25
20s	16		

SOUTHERN TWO-PLY WARPS, ETC.

8s to 10s		26s	17½@18
12s to 14s		30s	19@19½
16s	15½@16	40s	23@24
20s	16 @16½	50s	30
24s	17½		

SOUTHERN FRAME PEELER CONES.

8s		20s	17
10s	15	22s	17½
11s	15	24s	18
12s	15½	26s	18½
14s	16	30s	19 @19½
16s	16¼	40s	24@25
18s	16½@17		

THE KNIT GOODS MARKET.

The market shows some improvement at this time of writing, especially for fall lines, both in underwear and hosiery, still sellers are complaining more or less of the slowness in trade, especially in reference to spring orders. There is an inclination on the part of the jobbers to go cautiously in the placing of orders with manufacturers or their agents, as there is more or less uncertainty concerning the situation as it is affected by the price of cotton yarns, more particularly as they relate to the production for spring goods. We learn that some mills on staple lines of goods that have an established reputation are receiving a fair number of orders to keep their machinery in operation. Women's ribbed goods in the cheaper grades have been taken by some of the larger Western jobbers, in addition to the fall re-orders that have been placed. There is a coming realization of the shortage in certain lines of fall underwear, especially when re-orders are sent in from the consuming trade, asking for quick deliveries and finding that these requests have to be turned down in many instances, because the goods are not in hand and can not be delivered for some time to come. Certain makes of fleeces in the cheaper grades are receiving considerable attention. The same remark may apply to ribbed goods of the poorer grades.

One of the reasons for the distinct shortage of desirable underwear in the retail trade is the action of the credit departments in some of the large distributing houses in refusing to check purchases for more than enough goods to fill the shelves. For this reason jobbers find it difficult to sell the large retail houses any great quantities of goods at one time.

We find, however, that the demand is comparatively strong for goods where the standard has been maintained, and in some instances mills are fully a month behind in filling orders for this class of goods.

This is an evidence that where manufacturers have maintained their standard of excellence they are now realizing the benefit of their judgment in having a sufficiency of orders to keep their machinery in operation. This is in distinct contrast with those manufacturers who are disposed to cut prices and then deliver goods to conform to these prices, or in other words making the goods fit the price rather than making the price fit the quality of the goods.

SOUTHERN COTTON MILL STOCKS.

Quotations by F. C. Abbott & Co.,
Charlotte, N. C.

	Bid	Asked
Aiken Mfg. Co.		...
American Spinning	180	
Arkwright Mills		...
Arlington	166	
Avondale		...
Augusta, Ga.		...
Bonnie	121	
Bloomfield	118	
Brandon Cot. Mills	120	
Brookside	151	
Capitol City, pref.	96	
Clara	126	
Clover	150	
Clinton	138	
Clinton, pref.	103	
Cliffside	155	
Chiquola Cot. Mills	124	...
Cherokee Mfg. Co.		...
Converse	117	
Dallas Mfg. Co., Ala.	100	
Dillon	60	68
Efird, N. C.	183	...
Emira, pref.	96	
Eagle & Phoenix	187½	
Easley	150	
Edenton, N. C.		...
Exposition	240	
Fairfield	75	80
Florence, N. C.	186	
Gaffney Mfg. Co.	66	70
Gaston	100	
Gainesville	49	...
Gibson	95	99
Graniteville, S. C.	165	
Gray Mfg. Co.	128	
Grendel	119	
Greenwood	97	
Highland Park	170	
Hartsville pref.	100	...
Hartsville		...
Inman Mills S. C.	107	
Kesler	140	...
Jno. P. King Mfg. Co.	99	
Lanaster, com	119	...
Lanett		...
Langley Mfg. Co.	94	...
Linden, N. C.		125
Limestone	145	161
Loray, pref 1901		98
Lowell	200	...
Mooresville, N. C.		...
Lumberton		198
Mills Mfg. Co.		110
Modena Mills		126
Mollohon		...
Monarch, S. C.	100	106
Newberry		146
Nakomis N. C.		156
Olympia, 1st		67
Ozark		151
Patterson		150
Piedmont Mfg. Co.		176
Pelzer		...
Pell City, com.		95
Pell City, pref.	100	...
Saxon		...
Sibley, Ga.		65
Social Circle		...
Spartan Mills		...
Springstein		...
Statesville Cot. Mills	115	...
Trenton, N. C.		...
Tryon, N. C.		143
Tuscarora	115	...
Tucapau, S. C.	200	...
Toxaway	94	95½
Union Buffalo, 1st pref.		61
Union Buffalo, 2d pref.		21
Victor Mills, S. C.		128¾
Warren Mfg. Co.		105
Washington Mills	25	...
Washington Mills pref.		118½
Watts		101
Wareshoals		...
Whitney		125
Wiscassett	180	
Woodside		105
Woodruff	121	...
Williamston		108

There is not the slightest doubt that very serious effects are experienced by operatives in spinning rooms in which the atmosphere is charged with dust, fluff, and the like matter, thrown out in the various operations.

Within the mills of New England every condition of warp sizing is to be observed, from the almost obsolete practice of souring the starch to be used by allowing it to stand at soak in a large vat, down through innumerable changes of machinery—and variety of sizing ingredients—to the up-to-date processes and formulæ that are giving a high degree of efficiency at the minimum of expense in time and material.

The Textile Mill Situation in New England and the South.

NEW ENGLAND COTTON MILL INDUSTRY.

General Improvement Over the Preceding Month—More Mills in Operation on Increased Time—Scarcity of Water a Hinderance in Some Localities.

Special Correspondence.

During the past month the condition of business among the New England cotton mills, has improved decidedly. Plants that a few weeks ago were running on reduced time have steadily increased their running hours, and some have found it necessary to run nights in order to keep up with their orders. The Labor Day holiday period in September gave an opportunity for repairs. Since the holiday resumption, operations and increased time have been the rule. Curtailments have been growing steadily less each week.

In some parts of New England, especially those sections where water-power is the dependence of the factories, is has been necessary for the plants to exercise care in the use of water, and some, owing to the absolute lack, have been obliged to shut down. The dry period in September continued through the month to such an extent that the country experienced a repetition of the drought of the early summer.

CONNECTICUT.

An enterprise is in progress near Norwich, which is destined to be an important factor in mechanical progress, and that is the construction of a big concrete dam and power plant on the Shetucket River, by the Uncas Power Co. It is one of the mose elaborate enterprises of the kind in that vicinity.

The Baltic Mills Co., Baltic, is completing a new reservoir which is to cover an area of 35 acres, and will contain 95,000,000 gallons of water. The main dam is of concrete 300 feet long, and a side dam is 390 feet long.

The Lawton Mills, Plainfield, have been installing new cards, speeders and spinning-frames. It is reported that new looms are to be added.

A contract has been placed by the Narrow Fabric Co., New Haven, for the construction of a two-story addition to its plant, 68 by 200 feet area.

MAINE.

The Alfred Embroidery Co., Alfred, is about to occupy the new mill which has been in process of construction for the past month.

The Troy Bleaching Co. has been organized at Biddeford, with a capital of $300,000. The officers are: C. W. Ross, president and treasurer, and F. B. Ross, clerk.

NEW HAMPSHIRE.

One of the highest concrete dams has just been completed at Nashua, for the Nashua Manufacturing Co., and the water has been let down against it.

The Exeter Manufacturing Co. has installed 500 new looms, entailing the largest outlay ever made in improvements at any one time. The work was completed in season to resume operations last month.

MASSACHUSETTS.

After no little argument in consideration of the proposition to enlarge the plant, the directors of the Seaconnet Mills, Fall River, have decided that the expenditure of $100,000 required to build a structure which will balance the present buildings is unwarranted.

The New England Cotton Yarn Co. are engaged in extensive alterations which will require some months to complete. The equipment of the No. 3 Globe yarn mill which heretofore has produced carded yarns, will be changed for the production of fine goods. It is proposed to install enough combers to turn out 100,000 pounds of yarn weekly. Twenty-six pairs of mules will give way to ring-frames.

It has been decided to increase the equipment of the Richard Borden Manufacturing Co's. plant by the addition of 96,000 spindles.

The Sagamore Manufacturing Co. has placed a contract for a large number of new spinning-frames.

New Bedford expects to have a new 50,000-spindle fine-goods mill, and Walter H. Langshaw, president of the Dartmouth Mill, has been promoting the enterprise. All the plans for putting the stock on the market or for the construction of the mill have not been made public. The present is considered a fitting time to begin such an enterprise, so that when the tide of trade and prosperity sets the other way the plant will be ready to handle some of the great amount of business expected. There have also been rumors circulated of a cotton mill to be built of 500,000-spindle capacity.

Henry H. Rogers has completed plans for building a number of pretty cottages of modern design and appointment for the use of the factory employees of Fair Haven. A nominal rent will be required, which may be turned toward payment for the cottage, if the tenant so desires. The buildings are to be a part of a general plan of civic improvement, which will result in a settlement organized on the best sanitary lines.

The Commonwealth Manufacturing Co. has been incorporated in Boston to engage in the finishing and waterproofing of fabrics. The capital stock is $50,000.

Several additions are being made to the Windsor Print Works, North Adams, in the raising of roofs and building on more stories to some of the department buildings. The increase of space is necessary to provide for the enlarged work of the plant, which has been obliged to run nights and overtime.

The new power plant which has just been completed at the Pacific Mills, Lawrence, is a building 78 by 125 feet area of brick and steel, with a boiler-room, 86 by 142 feet area. In the turbine room there are three 2,250-kilowatt units; a 75-kilowatt engine-driven alternator; a 50-kilowatt steam driven, and a 55-kilowatt motor-driven exciter. The coal-pocket is 209 by 52 feet, and the 200-foot chimney is of nine-foot bore. It is expected that this plant will generate about 10,500-horse-power.

RHODE ISLAND.

Extensive improvements are to be made by the Hope Co. in their plant at Hope. Work is in progress on a boiler house to contain four new horizontal boilers, and

a new engine room and alterations are being made to the present mechanical rooms. It is proposed to remove the Colvin looms now in use, and replace them with Draper looms of latest style. The English mules will be replaced by modern spinning frames, and the plant brought up to date. Improvements in the arrangement of the buildings, making them more sanitary and better devised will increase the manufacturing value of the plant.

Local reports from Enfield convey the information that it is the intention of the Esmond Mills Co. to practically double the size of its present plant.

The American Textile Co., of Pawtucket, has placed an order in England for $100,000 worth of lace-making machinery, and when it shall have been installed the mechanical capacity of the factory will be practically doubled. Other improvements have already been made and the plant is very complete. At present the factory employs 250 hands, but during the next year it is intended to bring the number up to 500, or as fast as skilled lace workers can be secured.

The Warburton Thread Co., of Pawtucket, has been incorporated for the purpose of manufacturing and dealing in cotton, linen, woolen and silk threads and yarns. The capital stock is $50,000. The incorporators are: John J. Hanley of Providence, Franklin E. Warburton and John J. Devoe of Pawtucket.

It is expected that by November 1 the one-story addition, 144 by 54 feet, to the Columbia Narrow Fabric Co's. factory at Shannock will be completed. The building will provide another weave shed.

A large work has been completed at Pawtucket in rebuilding the trenches under the D. Goff & Sons' braid mill, which has been in progress since last May. The trenches have been so enlarged that the turbine power of the mill will be increased fully 25 per cent., and the probable cost of the improvements, ($75,000) is not considered out of proportion to the anticipated returns.

VERMONT.

There has been improvements in the knit underwear industry in Bennington to such an extent that operations are estimated to be about 90 per cent. of normal, and a demand for more spinners and weavers has developed among the establishments on dress-goods.

Earl A. Smith, Bennington, formerly associated with Charles Cooper in the manufacture of knitting machinery, has organized a factory for the production of hosiery.

NEW ENGLAND MILL SITUATION.

AN IMPROVEMENT NOTED. EFFORTS TO SECURE EXPORT TRADE. THE DEMAND FOR TEXTILE MACHINERY IS IMPROVING. MARKET FOR TEXTILE SECURITIES.

By Special Correspondent.

In the primary and secondary markets in New England there is quite an improvement in the demand for spot goods and sales are more freely reported than since the last of June. The reason for this is, no doubt, a feeling among jobbers that the curtailment policy, so successfully carried out by mills in this section during the past two months, has done much to relieve surplus stocks, and just as soon as the election is out of the way there will be a marked increase in demand for goods from jobbers and retailers which will create a shortage of spot goods.

Another very favorable development is the assurance on the part of many of the larger Boston retailers that the readjustment of prices, which has been progressing among the retail trade for the last two months, is practically concluded. There has been a strong feeling that as soon as a settled scale of prices had been determined by the retailers the demand for cotton goods would show an expansion. Jobbers have a better feeling and say that supplies in the hands of distributors and converters are considerably below normal proportions.

Commission houses are making a great effort to secure export trade and to this end have reduced current quotations on sheetings from ⅛ to ½ cent. As an illustration 3.50 sheetings have been offered down to 4¾ cents although immediately advanced to a firm 4⅞ with 5 cents the general asking price. A concession of ¼ cent is noted in 3.75 sheetings which are now being offered freely at 4½ cents. The print market has improved fractionally from the concessions made last month because of the fact that the curtailment of 80,000 pieces in Fall River with the usual spot sales and deliveries on contract have caused a slight reduction in stocks.

It is authoritatively stated that between 3,000 and 3,400 bales of Pepperell standard drills were closed out for India account at 6¾ cents, or at a discount of ¼ cent from the present asking price. The removal of this lot of drills has materially helped the market for this class of goods and prices now hold firm at 7 cents. Exports to South American countries have been light, while a slight improvement is noted in inquiries for prices and samples.

Textile machinery manufacturers report an improvement in the demand for repair parts and are receiving a number of orders for new equipment for immediate delivery. The Whitin Machine Works feel quite encouraged over the improvement in the demand for textile machinery during the past month and a prominent interest identified with that company said he believed the "worst was over" and from now on we should have an improvement in the industry. The Draper Co. is making shipments of 2,000 Northrop looms to the Union Buffalo Mills, Union, S. C., and are receiving more new orders than last month. Cotton manufacturers are beginning to appreciate the present low prices of textile machinery as compared with one year ago and are either placing orders or entering into negotiations with manufacturers.

The announcement that Whitin Bros., of Whitinsville, Mass., had posted notices in their North Uxbridge and Saundersville cotton mills that the wages of their operatives would be reduced this month concurrently with an increase in the running time of these plants from 40 to 50 hours per week, was received with considerable interest among mill men because these are the last two mills in the Blackstone Valley to reduce wages. The labor situation in this section is very satisfactory. There is an abundance of good operatives and there appears to be a greater degree of efficiency that for some years. There are no labor questions at issue and indications point to a favorable labor situation for some time to come.

The market for textile securities has been somewhat irregular this month with transactions light. There appears to be no definite selling by discouraged holders; on the other hand there is little new buying. West Point Mfg. Co., West Point, Ga., sold off to 120 on sales of 50 shares,

which was a decline of 52 points from the last sale. This sale was made by a Boston banking house that purchased this company's rights when the last increase in stock was made and closed out a block of 50 shares at auction because of the absence of public interest. This mill is one of the Wellington & Sear's star propositions and is entitled to be classed with such stocks as Androscoggin, Pepperell, and Amoskeag.

Fall River mill stocks are holding firm with light offerings. There is no disposition on the part of investors to close out their holdings despite the unfavorable outlook. Quotations are lower than intrinsic values in many cases. New Bedford issues are selling off but no heavy sales have been reported recently. Dividends are being well maintained and the selling is confined to weak accounts.

TEXTILE MILL NOTES FROM CHARLOTTE, N. C.

Unmistakable Improvement. Stocks of Goods Have Been Largely Cut Down. A Demand at Better Prices Has Developed.

Special Correspondence.

The past two weeks have witnessed unmistakable improvement in the textile industry in this section of the South. There are numerous reasons for this opinion, each one being sufficient. First, the accumulation of stocks in the yarn and cloth mills of this section, as well as throughout the South, has been greatly reduced.

A called meeting of the Southern Soft Yarn Spinners' Association was held in Charlotte recently and reports were submitted showing that stocks in all the mills had been largely cut down. At this meeting it was recommended that all soft yarn mills refuse to accept orders that will not give a profit, in other words, that the present policy of curtailment be continued until the market shall have recovered to a still more marked degree.

Another reason why it may be said that conditions affecting Southern mills are improved is in the fact that the demand for goods has recently been greatly increased, at better prices. It is said on good authority that there are now a number of commission house representatives in the South attempting to buy all the goods they can secure at present prices. Mill men have received offers for several months a head at current quotations, but they are refusing to sell on this basis.

One of the best indication of better conditions, however, is that many mills heretofore totally or partially closed down, now find it possible to resume full operations at a profit. Beginning September 7, a number of large mills resumed work, and in some instances night work has been started up again. Since that date other mills have started up, and almost daily reports come in from various parts of the South telling of a resumption of operations at mills that have been curtailing throughout the summer.

One of the best posted mill men in this section gives as his opinion that at least eighty-five per cent. of Southern mills that have been following policies of retrenchment since the panic began, will have resumed full time operations by the early part of October.

Here are a few mills that have resumed work during September, or that are planning to start up soon: The Randleman Hosiery Mills Co., Randleman, N. C.; the Iceman Mills, McColl, S. C.; the Henrietta Mills, Caroleen, N. C., which because of high water, during the heavy rains in that section, were forced to close down for a short period, and the Elizabeth City Hosiery Co., Elizabeth City, N. C. Since last January this latter company has made hardly half time and during the summer months only made short time. The conditions affecting its business have improved to such an extent that the officers believe they will be able to continue full time operations the balance of the year.

Night and day work has been resumed by the Franklin Mill, at Concord, N. C. The mill at Glendale, S. C. is running full time again.

The Spartan Mills, Spartanburg, S. C., are now running full force. Formerly they had been running half force. The Woodlawn Mfg. Co, and Nims Mfg. Co., Mt. Holly, N. C. are now on full time. Night work has been recently resumed.

The large string of mills, known as the Chadwick-Hoskins mills, having 90,000 spindles, Charlotte, N. C., are now making good time.

Above are a few of the mills that have found it to their advantage to resume operations. There are many others, but this list is sufficient to warrant the statement that textile conditions are greatly improved. From the recent picking-up in demand for goods it is safe to predict that an almost normal business will be enjoyed this winter and spring.

The recent freshets in this section did considerable damage to mill property, but most of the damaged property has been replaced, and the mills that were affected are about ready to take up work again.

The sale of the Eugenia and Clark Mfg. Co., Jonesboro, N. C., has been confirmed, and it is likely these mills will begin operations soon. The mills went into the hands of a receiver in March.

From the various parts of this section news of improvements and extensions at different mills comes in, indicating that the mill men are planning for a good year's business. New mills are being chartered, and from talk with prominent mill men there is an abiding confidence in the early return of normal conditions.

DRAW FRAME AND LAP FRAME COMBINED.

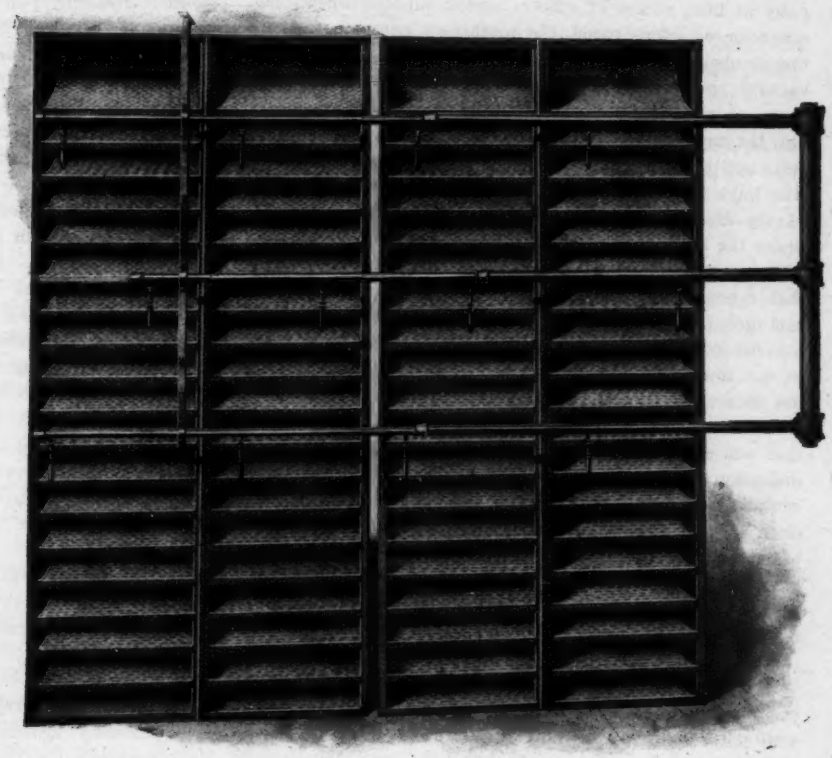
With the Dobson & Barlow's (Bolton, England) system of draw-frame and lap machine combined, for preparing comber laps, the ordinary style of drawing frame before combing is omitted entirely, and the card slivers are placed behind a small sliver lap machine and made into a lap; six of these laps are placed in the creel of the ribbon lapper and are drawn through four lines of top and bottom rollers in the form of a ribbon instead of a sliver, and by means of curved plates these ribbons are placed with mechanical accuracy perfectly even and level one upon the other, and are compressed and conveyed by means of calender rollers upon a polished plate to the lap end where they are formed into laps for the combers. This machine having placed all the fibers perfectly straight or parallel and equally distributed the amount of cotton, from two to three per cent. less waste is made in the comber; the cotton is not injured nor broken in the effort necessary to straighten crossed fibers, as scarcely any exist. The lap is of a true uniform thickness. The nipper holds it evenly throughout, the combs all have an equal share of work to do, less waste is made, broken fibers avoided, and better combing is the result.

NEW MACHINERY AND TRADE NOTES

THE PEERLESS AIR WASHER.

The Peerless Air Washer, designed and manufactured by the New York Blower Co., of Chicago, is described in a new and interesting catalogue. Besides showing various details of this apparatus the catalogue also contains much instructive matter regarding the principles of air washing, purifying and moistening.

SPRAY HEAD.



AIR WASHER.

In its elementary features this air washer comprises a series of highly efficient spray heads and a combination of eliminators or extractors. It is designed to be practically everlasting.

The spray chamber in which the spray heads are grouped is of a size for the disposition of a series of heads and for complete contact between air and spray. The heads are arranged in staggered rows so as to insure a complete sheet of mist through which the air must pass. The action of the head gives considerable thickness or body to this sheet and the arrangement of the heads allows the discharge from each to lap over into the field covered by the adjacent heads. The entire space devoted to the spray chamber is thus continually filled with mist.

The individual spray head or atomizer is given the form of a branching pipe with the ends bent so as to face each other; one stream of water is thus forced directly against the other. The two equal streams thus shaped, impinge directly upon each other and break into an almost invisible mist or spray.

The spray heads are supplied with water by horizontal pipes which connect on the outside of the chamber with a vertical supply header. The header contains a cylindrical brass screen or filter through which all of the water must pass before it enters the heads.

The eliminators are usually installed in series, and are particularly designed for the removal of excess moisture. Each unit of the complete eliminator consists of a vertical series of upward curved perforated plates.

The flow of moisture laden air through the eliminators is compelled by the action of a fan. By its means a slight vacuum is always created in the chamber between the last eliminator and the fan. The effect of this vacuum is to insure equality of flow over the entire area of the eliminators.

The Blue Book. This textile directory, published by the Davison Publishing Co., 401 Broadway, New York, for 1908-1909, has recently made its appearance from the press in the same convenient form and arrangement as previous editions. This directory of the United States and Canada covers every branch in the textile industry—cotton, woolen, silk, jute, flax and linen manufacturers; dyers, bleachers and print works; commission merchants, converters and brokers; yarn dealers, cotton, wool, hair, waste and rag dealers; raw, thrown and spun silk dealers; dry goods jobbers, etc., with a full classified directory of cotton and woolen mills and a complete textile supply directory.

The Official American Textile Directory. This is the title of a complete directory of all textile establishments in the United States, Canada and Mexico, published by the Textile World-Record, Boston, Mass. The 1908 edition has just been published in two forms, one for office and one for travelers' use. It includes cotton, woolen, knitting, silk, flax and jute mills of the United States, Canada and Mexico, together with the dyeing and finishing works, bleacheries, print works and other textile establishments, about 7,000 in all. Full informaton is given about each mill in almost every instance, viz: the name of the company or firm, names of officers, agent, superintendent, the character of goods made, the machinery equipment, i. e., the number of sets of cards (or combs), the number of spindles, number of looms; whether the mill uses steam, water or electric power, whether there is a dye house or not, the names of the selling agents or if the mill sells direct, and in most instances the name of the man is given who buys the raw materials and supplies. In this section of the directory, all the mills in one place are arranged under the head of that town, but so designated by boldface letters that the kind of mill is determined at a glance, so that a person looking, for instance, only for woolen mills, can pick them out instantly. This system of arrangement is conceded to be very convenient as it groups all the mills in one town together and is self-indexing. This directory has 23 textile maps, which show only the cities and towns where there are textile establishments. This is a feature that was originated by the proprietors of this work. This directory has an alphabetical index and list of mills with worsted machinery; yarn trade index; classified list of cloth manufacturers; list of establishments doing dyeing, bleaching, printing, finishing and mercerising on order; list of dealers and brokers in wool, cotton, etc.; list of selling agents and dry goods commission houses, builders of textile machinery and dealers in mill supplies, etc.

The Norton Company, Worcester, Mass. This company has issued a booklet entitled "Helps—Dont's," for all who grind with emery. This booklet can be obtained upon writing for it.

The Berry Wheel. This wheel is manufactured by A. Hun Berry, Boston, Mass. This wheel or fan is used either as an exhausting or forcing fan for drying fabrics or materials, or for the discharge of steam, dust, hot or foul air, or gases, the ventilation of rooms or buildings, or for any purpose where it is desirable to have a movement of the atmosphere.

The Royal Ventilator & Manufacturing Company, 415 Locust Street, Philadelphia. Those in want of ventilators for any purpose would do well to write to this company for its illustrated catalogue.

The Cassella Color Co., New York. This company has issued a sample card relating to its Immedial Khaki G and D. These are two brands of immedial colors with which the current shades of khaki can be produced direct. They are distinguished for their excellent fastness to washing and light, possessing at the same time eminent levelling properties, and may be easily shaded with other dyestuffs. They are very well suited for every branch of cotton dyeing and machine dyeing.

Farbenfabriken of Elberfeld Company, New York. This company has issued a number of color cards relating to some of its recent dyes as follows: *Algole Dark Green B* paste, which yields a dark shade similar to Russian Green. The new product is dyed with the aid of hydrosulphite or glucose (or dextrine) and soda lye. The clearest shades are obtained when dyeing according to the hydrosulphite process, glucose on the other hand produces a more brownish olive. *Algole Orange R* paste, which is valued for its excellent fastness and for the production of fast shades on cotton material. The dyeings are absolutely fast to chlorine, extraordinarily fast to washing, boiling, alkalies, acids and light. *Toluylene Fast Orange GL*, which is valued for its excellent fastness to light. It is dyed according to the usual method with glauber's salt and soda. *Toluylene Yellow G*, which is dyed with an addition of soda and glauber's salt. It works easily level and in light shades possesses a good fastness to washing. *Katigen Black Brown B R* extra cone, which, although a low priced color, has the same great coloring power as the old Katigen Black Browns, and in regard to fastness also approaches the latter very near. *Diazo Brilliant Scarlet P R* extra, which is recommended for the dyeing of yarns employed for fancy woven goods which have to be fast to washing, for effects fast to cross-dyeing and for piece goods, half-wool and silk. *Katigen Brilliant Green G*, the principal advantage of which is its extraordinary clear shade, and is recommended for the dyeing of loose cotton and yarns employed for the manufacture of fancy woven goods, and for the dyeing of workmen's curtain-and-upholstery-cloth, etc., which are required to be very fast to washing and light.

The Klauder-Weldon Dyeing Machine Company, Amsterdam, N. Y. O. A. Robbins, Charlotte, N. C., has been designated by this company to act as its agent in the South.

Tangol. This many-sided new finishing and sizing material, recently introduced in the market by the Arabol Manufacturing Co., New York, increases continually its usefulness in German textile factories. American manufacturers report especially satisfactory results with a mixture of tangol and starch.

A Gas Pumping Plant. The Compania Azucarera del Panuco have just purchased for their sugar plant, at "El Higo," Mexico, a gas plant to pump water for irrigating purposes. This outfit consists of a Westinghouse suction gas producer, to operate on charcoal or anthracite coal, having a capacity of 150 H. P.; and a Westinghouse 3-cylinder, 15x14 gas engine of 140 H. P. capacity, of the belted type, running at 260 revolutions per minute. This is another example of the advantages of gas engines for cheap irrigation, and the benefits can readily be calculated when it is estimated that with the pumping plant referred to, 50 per cent. more cane will be gathered by watering the land than could be done without irrigation.

The Elements of a Successful Air Purifier. The deleterious effects of dust and the influence of humidity upon human comfort and health are now clearly recognized. This recognition has led to ever increasing interest in the development of a successful apparatus for the cleansing

and purification of air. Investigation has shown the dust particle to be the center of congregation for the micro-organisms as well as for the moisture with which the atmosphere is sometimes laden. If the dust particle is caught and removed we may therefore be sure that the accompanying bacteria have gone with it. Reasoning along these lines, the elements of a successful air purifier have been defined by The New York Blower Co., Chicago, in their new catalogue, descriptive of the Peerless Air Washer, in which they are embodied.

Wm. H. Brown Co., Worcester, Mass. This company was the first and only manufacturer of the Lewis card clamp to within a few years past. It has from time to time added several other tools and appliances used by carders and manufacturers, and is fully prepared not only to furnish any of its regular make of goods, but also to make to order tools of any style or patterns, as well as light machinery of all kinds. Particular attention is paid to pattern and model making and general jobbing in brass, iron and steel.

The Howard & Bullough American Machine Co., Pawtucket, R. I. The Sagamore Mfg. Co., Fall River, Mass., has placed a large order for spinning frames with this company, and the Russell Mfg. Co., Middletown, Conn., who is adding to its plant considerable machinery, has placed its order for picking, cards, and drawing frames with the same company.

The Cohoes Dyeing Co., Cohoes, N. Y., offers exceptional facilities for the dyeing of wool and cotton rolls, garments, raw stock, and random yarns. Bleaching of woolen, cotton, and union piece goods, and special facilities for bleaching cotton (raw stock). Special attention is given to the redyeing of waste and clips. Sulphur colors on raw cotton a specialty. A complete line of resist colors on silk and wool has been obtained, and the company will be pleased to confer with any interested party. An experimental laboratory forms an important part of the plant. The capacity of the plant is 20,000 pounds per day.

Clayton & Bentley, Atlanta, Ga. The Pelzer Manfg. Co., Pelzer, S. C., replaced 725 double forks with this company's automatic thin place preventer in 1907. It installed 194 more double fork automatic looms about January 1st, 1908, and recently equipped these looms with the C. & B. thin place preventer. There have been similarly equipped 1,957 single fork automatic looms in this mill. The American Linen Co., Fall River, Mass., and the Ossippee Cotton Mills, Burlington, N. C., have all their double fork automatic looms equipped with this device.

Small Curtis Turbines. The increasing use of small Curtis steam turbines is shown by an inspection of a partial list of turbines under 500-kw. capacity which up to the present time have been installed by the General Electric Company or are under construction. Of the 570 odd turbines listed, representing a total capacity of about 37,000 kw., 7 per cent. are for the export trade. The remainder are intended for domestic service in central stations, marine work, laboratories of educational institutions, power and lighting plants for hotels and office buildings, laundries, mines, printing establishments and in every branch of manufacturing. It is interesting to note the widely different industries in which small Curtis steam turbines are used. Among the list are woodworking plants, foundries, iron and steel mills, distilleries, chemical plants, ice plants, textile mills, breweries, tanneries, flour mills, shoe factories, paper mills, machine shops, textile mills, and ammunition manufacturing plants.

SCHAELLIBAUM'S GRID.

"The Schaellibaum grid is by far the best I have ever seen."—*Supt. J. W. Worsham of Covington Cotton Mills, Covington, Ga.*

"The Schaellibaum grids are a mighty good thing, and I know it; they are a big improvement over other grids."—*Harry K. Drew, when superintendent of Fulton Bag & Cotton Mills, Atlanta, Ga.*

"I have a high opinion of Mr. Schaellibaum as a picker expert."—*E. C. Beach, when Supt. of Gate City Mills, near Atlanta, Ga.*

"Your grids are doing all you claim for them."—*Supt. Chas. Wheeler of Griffin Mfg. Co., Griffin, Ga.*

"I have used the Schaellibaum grid for the last 10 years, and know they exceed all you claim for them in every particular. There is no question about your grid being far superior to anything else on the market."—*Supt. M. E. Stevens of Columbus Mfg. Co., Columbus, Ga.*

"By all means, put them on all pickers just as soon as you can get them on."—*J. J. Bradley, Agt. of Merrimac Mfg. Co., Huntsville, Ala.*

"Tell Mr. Schaellibaum the grids are doing splendid work."—*Scott Maxwell, formerly Supt. of Lanett Cotton Mills, West Point, Ga.*

The Carrier Air Conditioning Company, 39 Cortlandt St., New York. This company has purchased of the Buffalo Forge Co. all the latter's rights for the sale of the air washers, humidifiers and humidity controlling apparatus which the latter company has been manufacturing under the Carrier patents. This improved system is adapted equally to summer and winter conditions using the same apparatus. It humidifies and cools in summer by artificial ventilating with cold saturated air and humidifies and heats in winter by first saturating the air at the proper temperature, and then heating the air after saturation to a temperature sufficient to maintain the required temperature and humidity conditions in the room. The apparatus consists of an air washer and humidifier, fan and heater and a system of ducts for the distribution of the humidified air. The humidifier consists of a large chamber in which spray is atomized under pressure by means of a large number of cyclone nozzles.

C. L. de Muralt, of Muralt & Co., New York, owing to the success which attended his lectures during the past academic year, has been re-appointed professor of electrical engineering at the University of Michigan for the coming year. During the winter semester Prof. Muralt will devote his attention to the consideration of the more general aspects of applied electricity. The course of lectures will include the discussion of (1) the characteristics and application of alternating and continuous current motors, (2) the design, construction and operation of electric plants, (3) the principles and methods of transmitting, distributing and controlling alternating currents, (4) the calculation

and operation of electric railways, and (5) the management of electric properties, with special references to the commercial aspects of electrical engineering.

Harding, Fancourt & Scull, 1095 Germantown Ave., Philadelphia. This concern reports an ever-increasing sale for their *Tuscan* softener, which is being used extensively by fast black dyers. For softening fast black, *Tuscan* softener is claimed to be unexcelled, imparting to the finished product an exceptionally bright luster and soft feel. One advantage of this softener is that it does not leave any odor in the goods after they are finished, again, it is not necessary to use any additional softening oils in connection with it. For sulphur black it is unexcelled. To those desiring to test its merits the above manufacturers will be pleased to submit a five pound sample, free of cost.

Harding, Fancourt & Scull. This is a new copartnership, succeeding Harding & Fancourt and Scull & Knight, of Philadelphia, for the manufacture and sale of soap, oils, chemicals, etc., at No. 1095 Germantown Avenue.

Cork Inserts. These are the product of the National Brake & Clutch Company, Boston, Mass., and are used for loom clutches, mule frictions, spinning frames, line shafting clutches, waterwheel governors, elevators, automobile brakes, hoisting engine frictions, shoe machinery, knitting machines, etc., etc. In fact they are applied to all machinery where frictions are used for power transmission and wherever the elimination of belt slipping is desired. Among the firms making use of these inserts are the following: American Woolen Co., Wood Worsted Co., Washington Mills, Burlington Mills, Weybosset Mills, Vassalboro Mills, Puritan Mills, Saranac Mills, Assabet Mills, Arlington Mills, Geo. A. Kunhardt, Oneka Woolen Mills, Pequea Mills, Gonic Mfg. Co., Cleveland Woolen Mills, Amoskeag Mfg. Co., Rock Mfg. Co., Crompton & Knowles Loom Works, Draper Co., Whitin Machine Works, Kilburn, Lincoln & Co., Lowell Machine Shop, and Geo. H. Gilbert Mfg. Co.

Excursion Rates to Atlanta by Central of Georgia Railway. Special excursion fares will be given by this railroad from all points in Georgia on account of the various objects as stated: State Fair, to be held October 8 to 24; Reunion, Georgia Division United Confederate Veterans to be held October 23 to 24; Southern Medical Association and Southern Medical College Association to be held November 9 to 12; General Convention, United Daughters of the Confederacy in America to be held November 11 to 15; Georgia-Carolina State Fair to be held November 2 to 7 at Augusta, Ga.; Georgia State Fair to be held October 27 to November 7 at Macon, Ga.

COTTON-PICKING MACHINE.

There has been put upon the market, with no previous heralding, what experts claim will solve the problem of cotton harvesting, and save millions of dollars to the cotton growers both in labor and in the amount of cotton harvested.

The inventor and patentee of this method is John S. Thurman. For ten years Mr. Thurman has been the successful manufacturer of compressed air and vacuum house-cleaning machinery of his own invention.

Mr. Thurman was born in Lynchburg, Va., forty years ago, and is a practical mechanical engineer and locomotive designer, and his experience was obtained in the machine shops of the Norfolk & Western Railroad before studying engineering. Mr. Thurman, when twenty years of age, was mechanical engineer of the Jacksonville, Tampa & Key West Railway system, in Florida; later chief mechanical engineer of the International & Great Northern Railroad; later with the Big Four system, and finally, before entering into business for himself, was chief mechanical engineer of the Missouri Pacific and Iron Mountain Railroad systems, and for some time was a locomotive designer on the Big Four Railroad.

Mr. Thurman did not announce his successful invention of the cotton picking machine until he had given it a thorough test. His system of gathering cotton consists of the application of practically the same principle of mechanics and physics as are used in his house-cleaning device. A motor driven by gasoline, the most inexpensive fuel that can be obtained to-day, is mounted on a wide-wheeled truck. The operation of this engine produces a vacuum in a tank connecting with a receptacle for the gathered cotton. Two or more lines of hose, each 100 feet long, connect with the cotton tank. At the end of each hose is a specially constructed and patented nozzle, controlled by the operator. This nozzle placed near the opened boll of cotton, draws the cotton into the hose and deposits it in a receptacle on the wagon. The boll is cleaned of every fiber of cotton and the vacuum is so delicately adjusted that it will draw into the receptacle only the clean cotton with no leaves or trash. A strip 200 feet wide, 100 feet each side of the wagon, can be gathered with the machine. It does not require expert operators to handle the nozzle and any man or boy can run the engine. Two horses or mules can draw the machine over the field. The hose is so adjusted that if dropped from the operator's hand no dirt will be drawn in. The cotton on the tallest and shortest plants is gathered with equal ease. When the receptacle of the machine is full it is emptied readily into sacks or on a tarpaulin. Two men will gather 1,400 pounds of cotton in a day working ten hours, which is easily seen to be an enormous saving in labor.

George D. Mayo Machine Company, Laconia, N. H. This company gave to its employees an outing and dinner last month, being the second annual event of its kind. Baseball, music, dancing and various kinds of races were enjoyed. This company has received, recently, orders for its machines from the Durham Hosiery Mills, Durham, N. C.; the Oconee Knitting Mills, Walhalla, S. C.; Zebulon Hosiery Mills, Zebulon, N. C.; Marion Knitting Mills, Marion, N. C.; Wilson & Dawson, Tarboro, N. C., and from the Holeproof Hosiery Co., Milwaukee, Wis.

Subscribe to Cotton. $2.00.

Weaving was in operation in the dim prehistoric light of far away time, before the weavers could conceive of spinning.

The stretching of the yarn requires only a small force when mercerised loose, and if applied when rinsing is actually in progress; because the best time for stretching is during the conversion of the soda-cellulose product into the hydro-cellulose.

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You Can See New Process Rawhide Pinions Everywhere, But Never Hear Them

New Process Noiseless Pinions make silent running machinery. They can be used wherever metal ones can, their drive is as positive, they wear like iron, they save power, they reduce vibration, they stand highest speeds.

Noisy gearing has always been expensive and disagreeable—now it's unnecessary.

Shall we send you a catalog?

The New Process Raw Hide Company,
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Patd. Feb. 26, 1889

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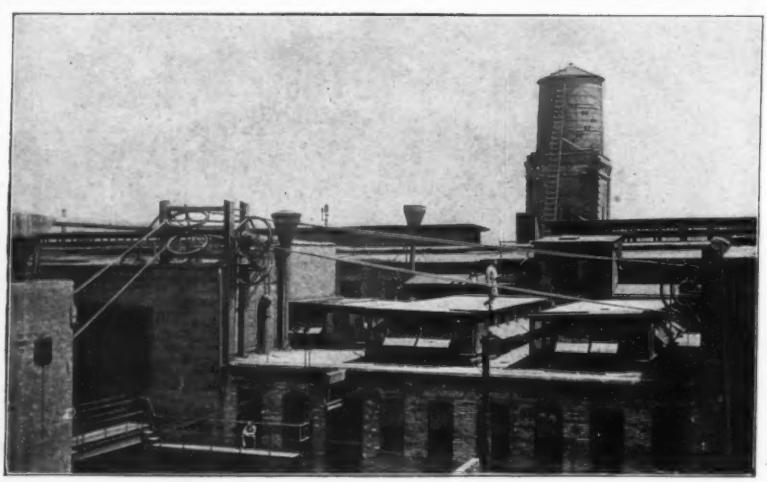

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Between Separated Buildings

"American" Waterproofed Transmission Rope offers the best known means of economically transmitting power between the separated buildings of a plant.

It is not affected by exposure to heat, cold or moisture and does not stretch in service, because it is hard laid under heavy tension, to eliminate initial stretch.

Write for our "Blue Book of Rope Transmission," a valuable and interesting illustrated text book on the many advantages of rope transmission, the cheapest, most efficient and most flexible known method of distributing power. Copies free to all upon request.

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A Remarkable Improvement in Textile Drying Machinery

is shown in

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This simple, compact and economical drier is rapidly taking the place of the dry can or cylinder dryer because it has proved in practical use to be far superior to the older forms. It is economical in first cost and in the cost of steam and power; in floor space occupied, and in cost of supervision and maintenance.

Send for photographs, plans and illustrated bulletins.

CELL DRIER MACHINE CO.

TAUNTON, MASSACHUSETTS.

New · Plant of the CELL DRIER MACHINE CO., Taunton, Mass.

ALPHABETICAL INDEX PAGE 92.

CLASSIFIED INDEX PAGES 87-90.

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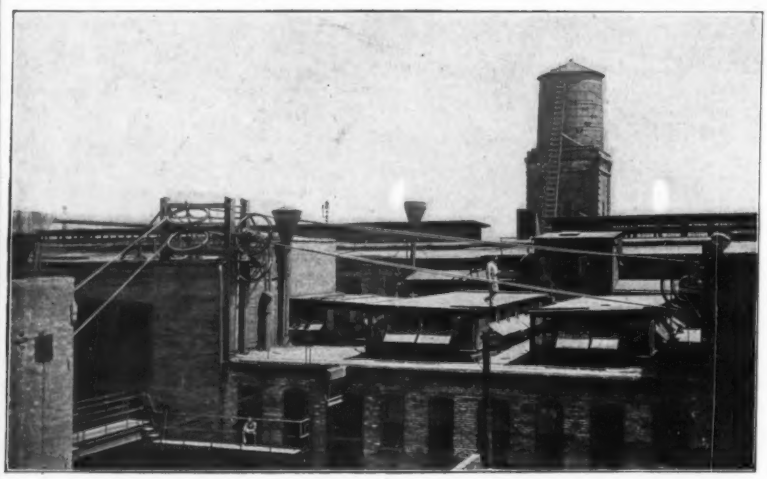
Fifteen years experience in stoker, boiler, power, heating, ventilating and drying engineering, is basis of my advice to clients.



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(Patented)

have wide application in Textile Mills.

One Type of Loom Clutch

The Amoskeag Mills

the largest cotton mills in the world

are using 700

Cork Insert Loom Frictions

Dynamo or High-Speed Fibre-Faced Cork Insert Pulley

and constantly adding to the number of looms so equipped.

Worrall Clutches Motor Pulleys

Every Worrall Line Shafting Clutch in the Amoskeag Mills is fitted with Cork Inserts.

Every Motor Pulley is now or is about to be fitted with Cork Inserts.

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National Brake & Clutch Co., 16 State St., **Boston.**

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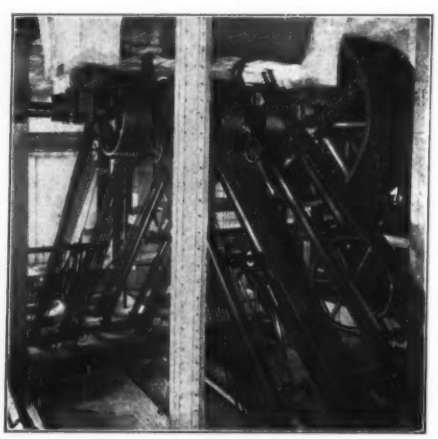

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"American" Transmission Rope

The "Blue Book of Rope Transmission" published by us is a concise and authoritative treatise for engineers. It includes a thorough technical discussion of the special advantages of rope driving over belting, gearing, electricity, wire rope, etc., data, formulae, and tables for calculating drives, directions for splicing ropes, and many practical hints on erection and maintenance. 64 pages, illustrated with many drawings, diagrams and photographs of notable installations. Copies free upon request.

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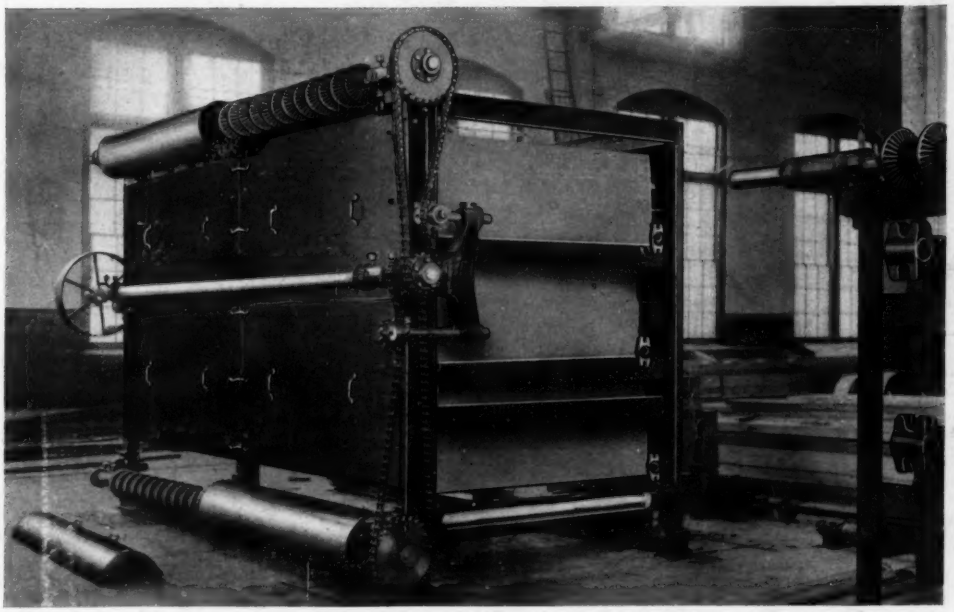
has greatly improved and simplified the process of drying cloth and yarn.



70 cell and 62 inch Cell Drier Erected in our Shop. A "Repeat Order."

It is also the most economical drier to install and is acknowledged to be the cheapest to operate.

It saves in steam, power and attendance, and eliminates repair bills. It is a notable advance in textile drying machinery, operating with entire success at high speeds with light or heavy fabrics. Send for bulletins and photographs.

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THE CELL DRIER

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A More Efficient Method of Power Transmission

Power may be transmitted in any direction by means of "American" Rope. Vertical drives, arranged on the American or continuous system, are precisely as efficient as horizontal drives.

Every practical mill man knows the difficulties of transmitting power vertically, or around corners with belting. Belting requires that local conditions and machine locations be adapted to the narrow limitations of belting.

AMERICAN TRANSMISSION ROPE

Rope driving can be arranged to suit whatever conditions exist. The manifold advantages of "American" Transmission Rope deserve the careful attention of all mill owners and managers. Write for our valuable 64 page treatise on Rope Driving.

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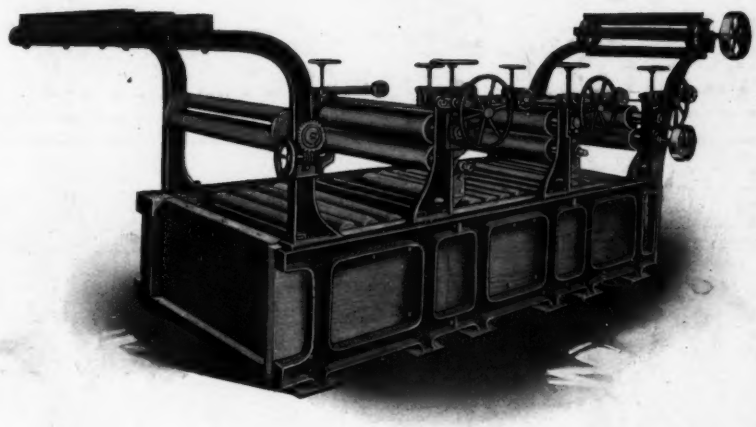
Ageing and Padding Machines for Aniline Blacks.
Skying Machines for Indigo Blues.
Open and Rope Washing and Soaping Machines.



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The Taylor and Fenn Company
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IN the manufacture of "American" Manila Rope not a thread of anything except pure long fibre manila hemp enters. No adulterants, inferior short fibre nor any weighing substances are introduced under any circumstances. The accompanying illustration clearly shows the kind of selected fibre employed in all "American" Manila Rope.

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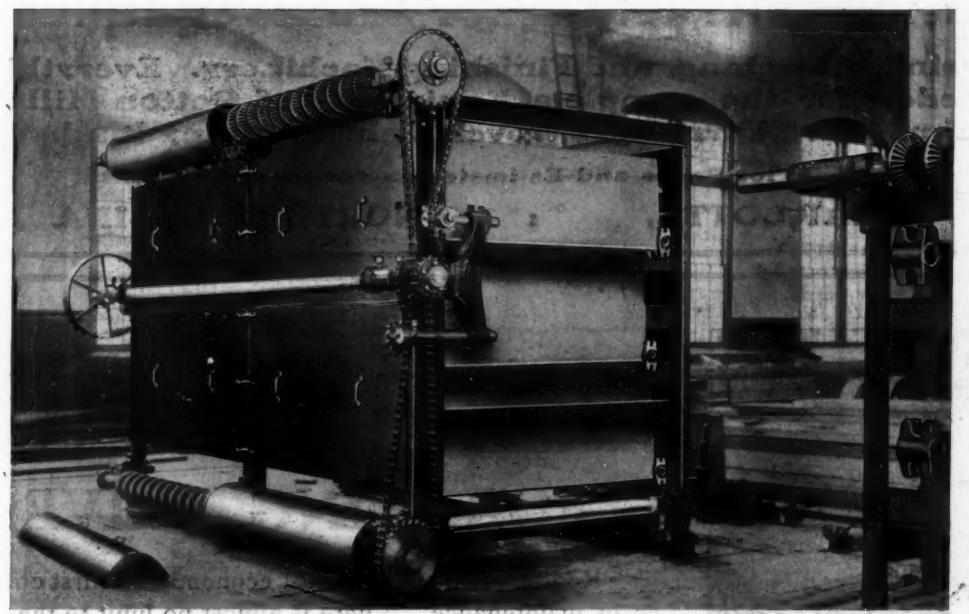
THE CELL DRIER

A Money-saver for Mills, Bleacheries and Dye-Houses.



The Cell Drier is a true money-saver because it saves at all points from first to last; saves wisely and profitably. It is less costly than dry cans—less costly in the power required to operate it, in the steam to heat it, and the labor to tend it. It does not wear out or require repairs. It quickens, simplifies and improves the process of drying textiles. Send for bulletins and photographs.

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FOR LONG DRIVES.

Rope transmission is most economical in first cost as well as in maintenance. There is almost no limit to the distance or direction in which power may be transmitted, either indoors or out of doors.

"American" Transmission Rope is weather proof and is not affected by exposure. It requires no external dressings of any kind. When desirable the shafts can be run through the walls of the building and the drive placed entirely outside, thus saving valuable inside space.

Write for "Blue Book of Rope Transmission," in which all phases of rope driving are carefully discussed and clearly illustrated by photographs and diagrams.

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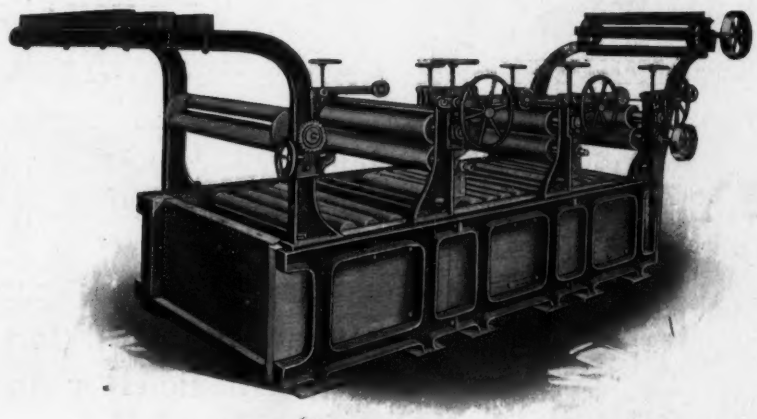

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WEAVING MILLS are urgently invited to investigate the merits of our latest model REWINDER for rewinding Imperfect Filling Bobbins and partly filled, snarled, or tangled bobbins. Advantages--Great Saving. More and better Loom Production. Small first cost.

For further particulars, address,

A. H. WASHBURN, CHARLOTTE, N. C.

"AMERICAN"

Hardly a week passes but that we receive orders for "American" Transmission Rope to replace ropes of other make which have not shown satisfactory durability.

If you will but compare the skill and care with which "American" Rope is laid and lubricated with the same features of competitive brands, you will comprehend why it is that "American" Rope is now outselling all other brands of power transmission rope ***combined.*** *Write for samples of "American" Rope.*

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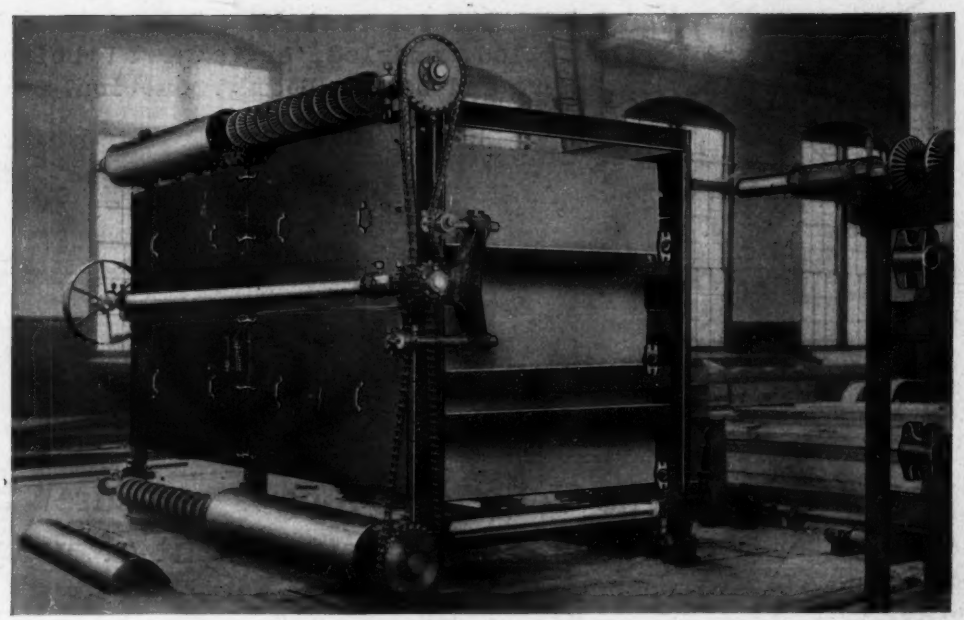

It has proved its right to this position through the simplicity and high quality of its construction and the speed, economy and excellence of its operation.

It has proved itself to be, not only the best of all driers but the cheapest; not in any debatable sense, but absolutely, in dollars and cents.

Shall we prove these statements to you?

Ask For Illustrated Bulletins.

CELL DRIER MACHINE CO.

TAUNTON, MASSACHUSETTS.

THE CELL DRIER

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Falcon Mill Crayons

The most satisfactory and economical crayons for mill use because they do not injure the cloth and are the largest crayons made. Falcon Mill Crayons are manufactured from select materials by men who have made textile work a study. They contain just the kind and amount of color to give the desired result.

Standard Crayon Mfg. Co.
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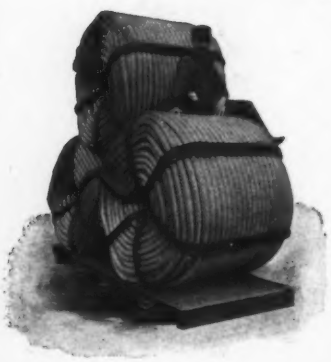
They Get What You Need

WEAVING MILLS are urgently invited to investigate the merits of our latest model REWINDER for rewinding Imperfect Filling Bobbins and partly filled, snarled, or tangled bobbins. Advantages--Great Saving. More and better Loom Production. Small first cost.

For further particulars, address,
A. H. WASHBURN, CHARLOTTE, N. C.

"AMERICAN"



The Value of a rope is measured by the amount of work you get out of every dollar's worth. Value is the ratio of cost and durability in service.

"American" rope is not the cheapest rope made, but it is the cheapest in the end. You can get more work out of every dollar invested in "American" Rope than any other known brand in the world. Furthermore, we are prepared to demonstrate this fact to all who are interested. *Write for our "Blue Book of Rope Transmission."*

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THE Rabbeth Patent Centrifugal Clutch Spindle is the greatest improvement that has been made in spindles for many years. Over 800,000 in successful operation.

DRAPER COMPANY
HOPEDALE, MASS.

Southern Agent, J. D. CLOUDMAN,
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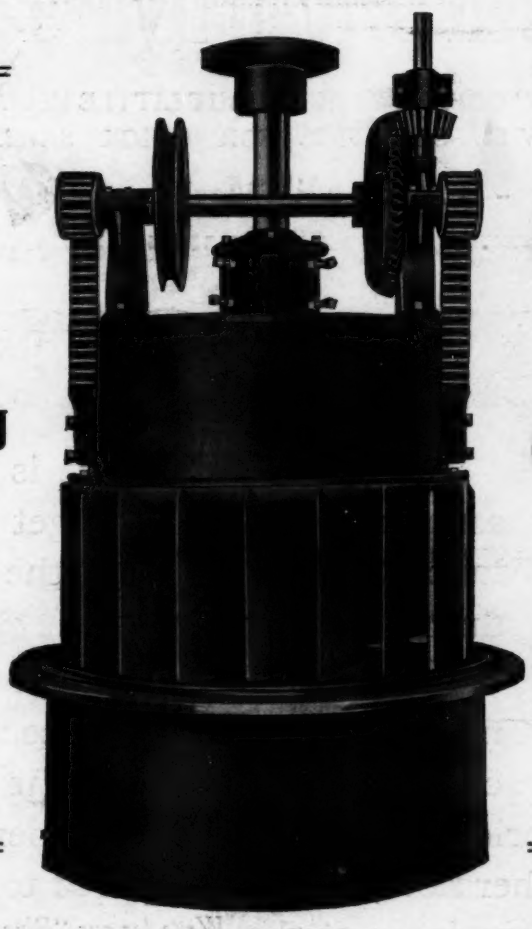

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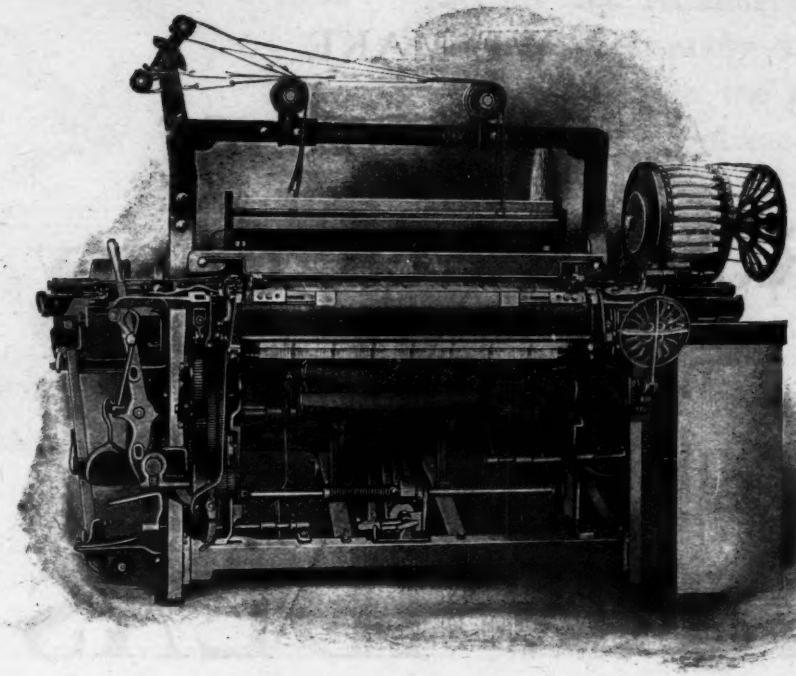

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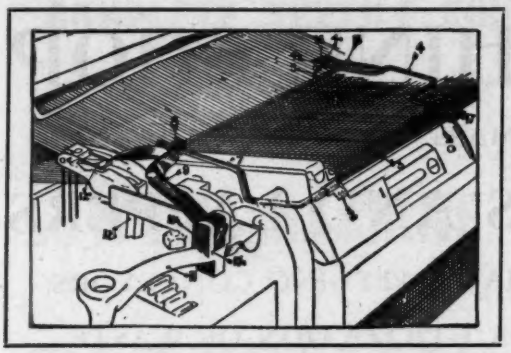

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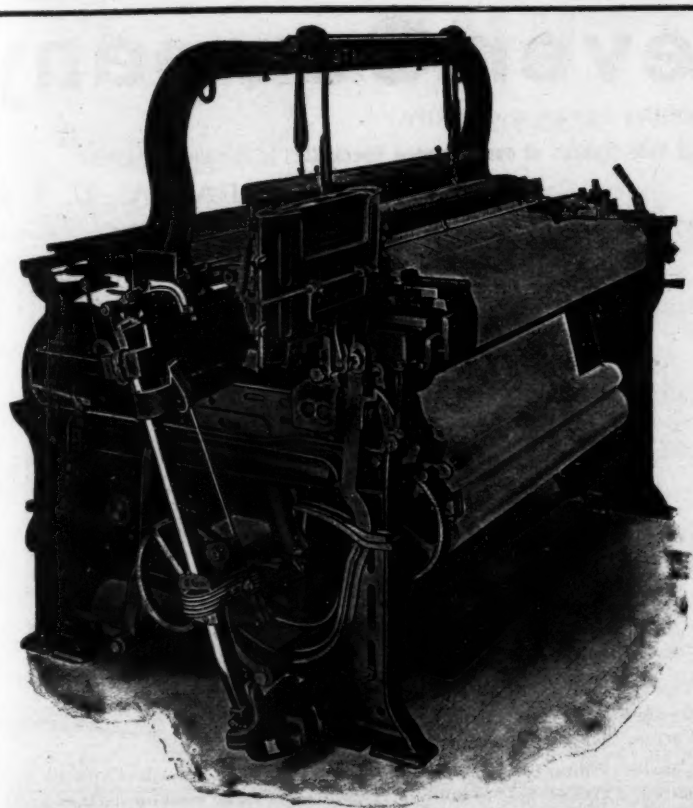

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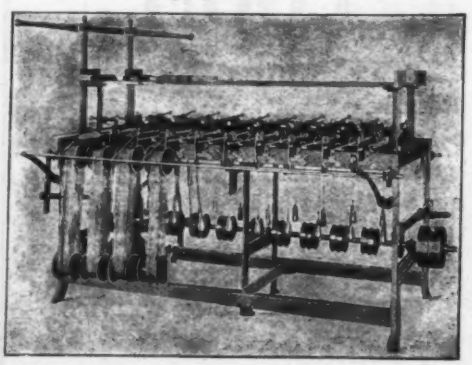

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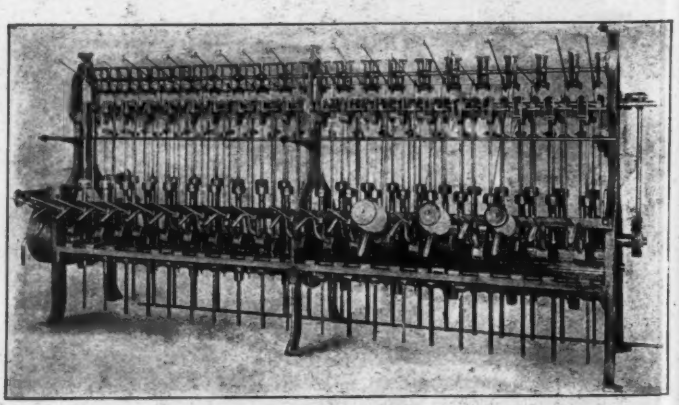

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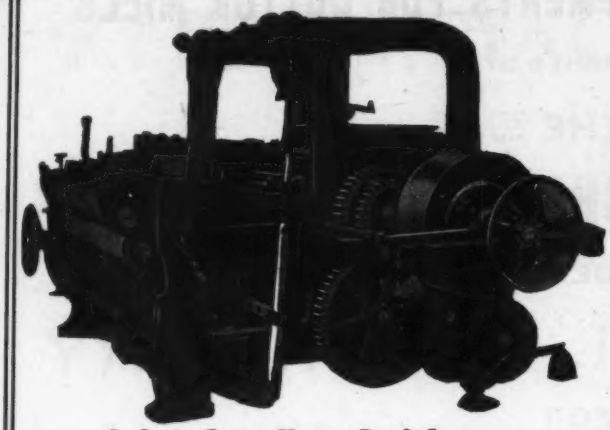

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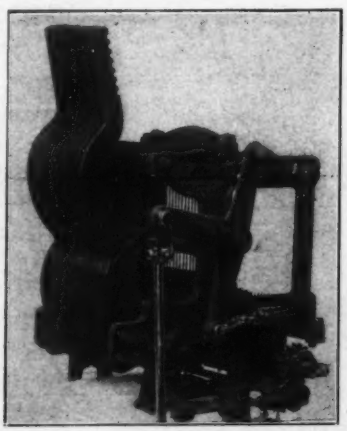

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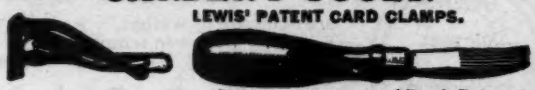

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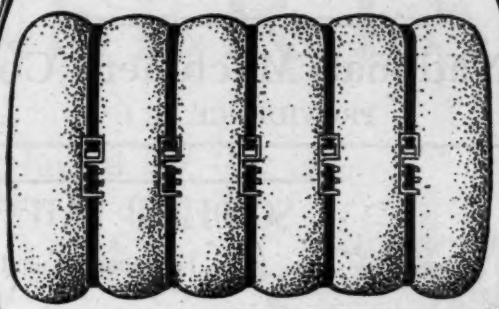

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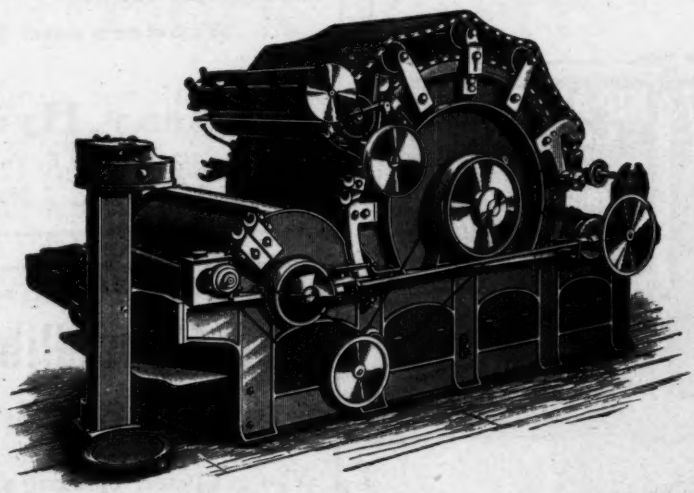

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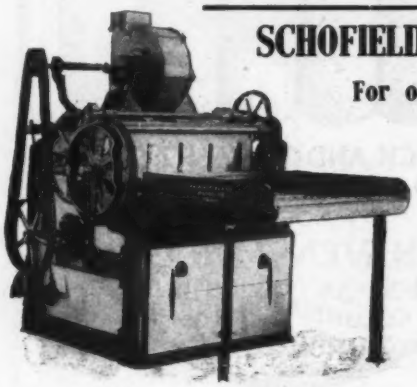

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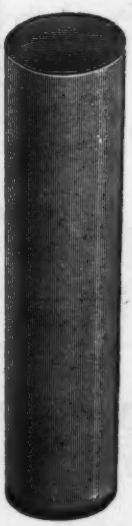

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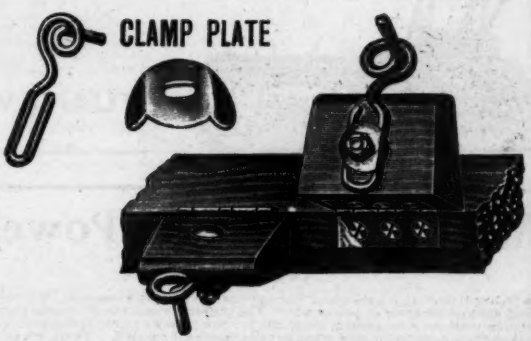

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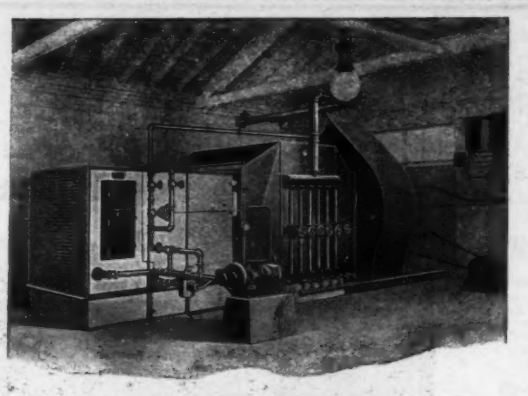

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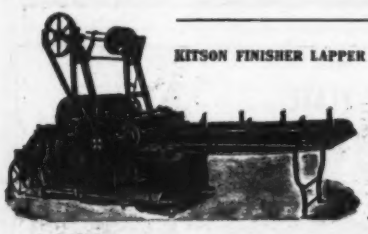

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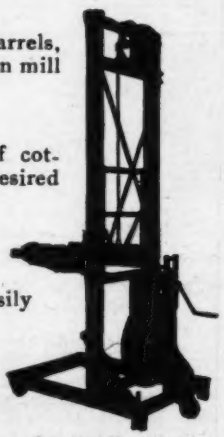

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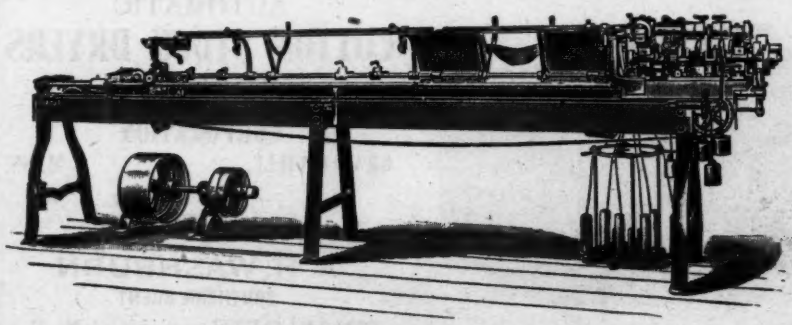

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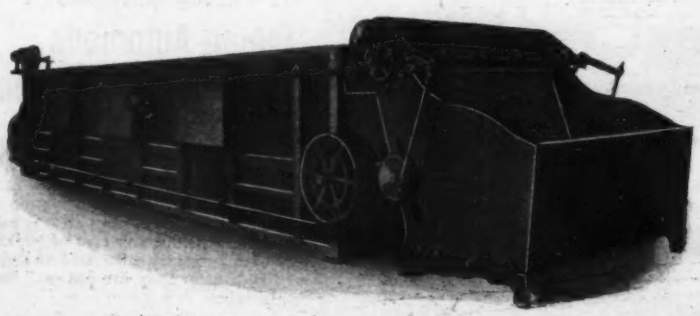

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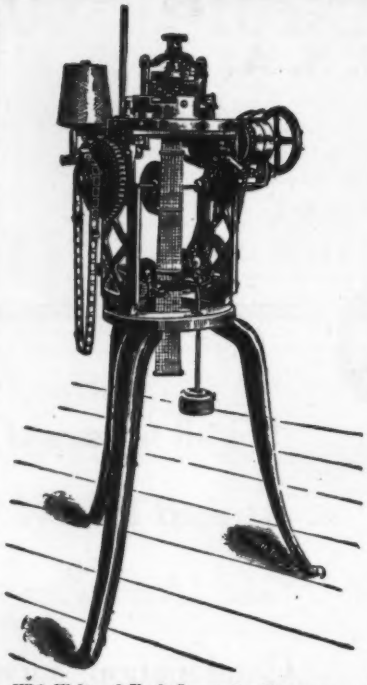

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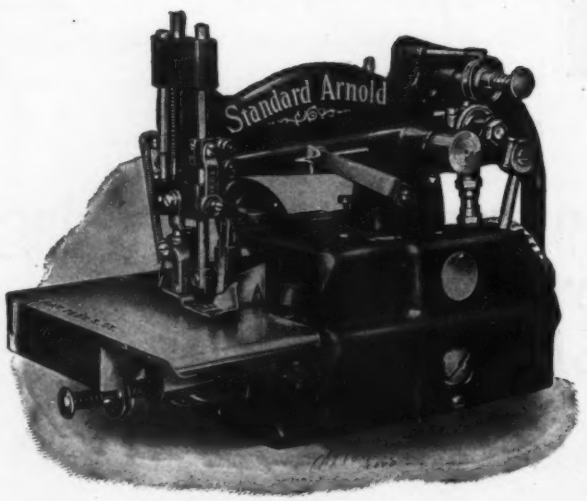

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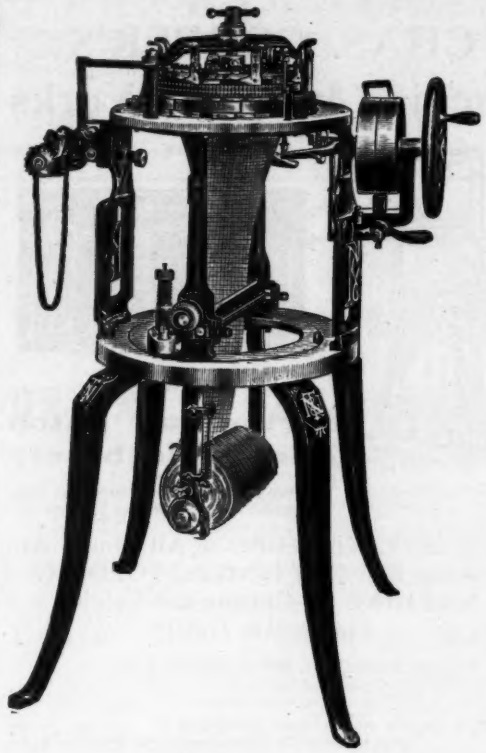

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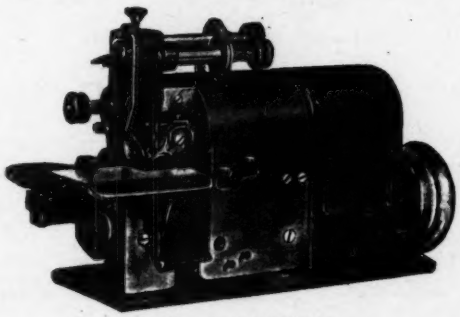

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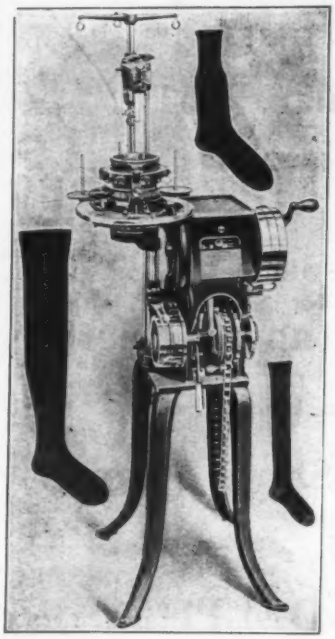

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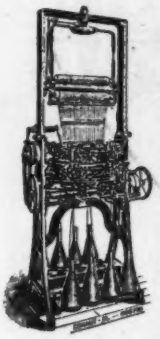

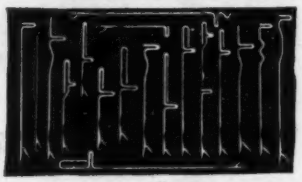

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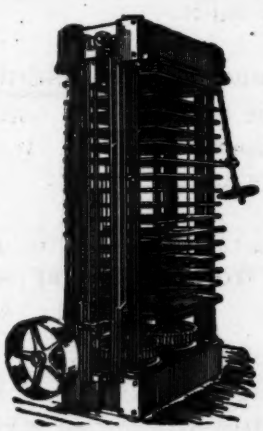

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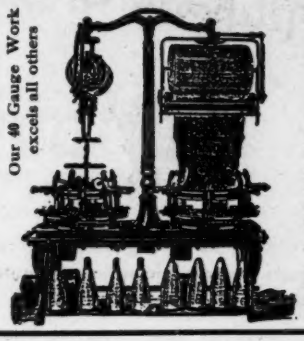

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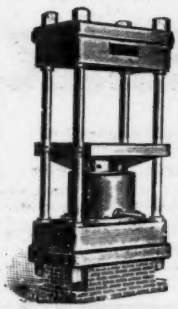
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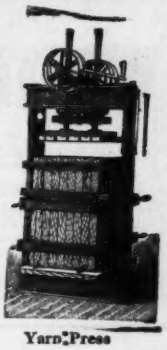
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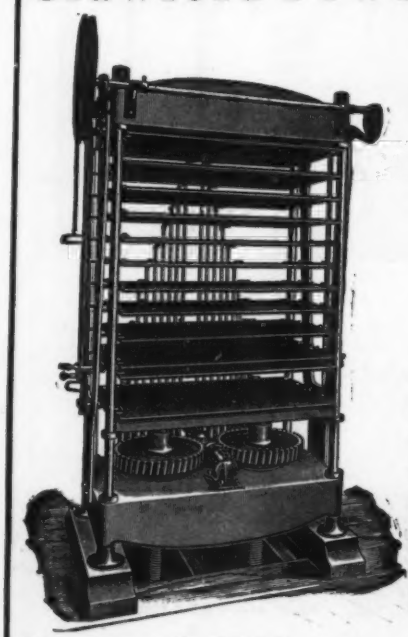

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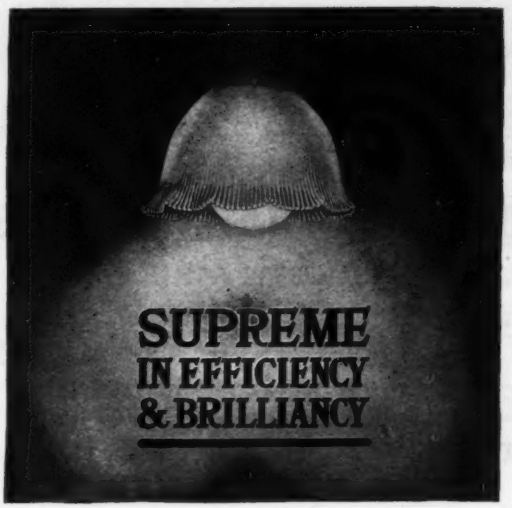

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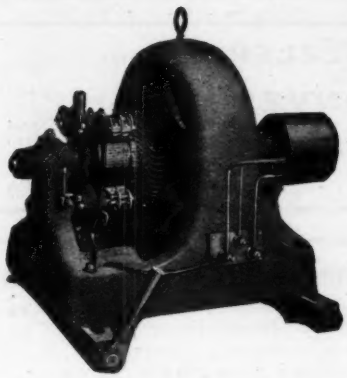

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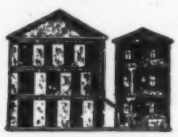

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FOR SALE
5,300 Spindle Cotton Mill
EQUIPPED FOR MAKING DUCK UP TO 20oz. 40 IN.
Adequate house room for operatives, including 13 room boarding house. Machinery of the very best make and conditions A 1. Twisters and Duck Looms. **Will gladly furnish information.**
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SPECIALIST IN SPECIFICATION AND CONTRACT WRITING FOR ARCHITECTS AND PURCHASERS
Fifteen years experience in stoker, boiler, power heating, ventilating and drying engineering, is basis of my advice to clients.

CARY'S BALE BAND
AND
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Those who have tried them say they are the best. We want YOUR opinion
Samples sent for trial.

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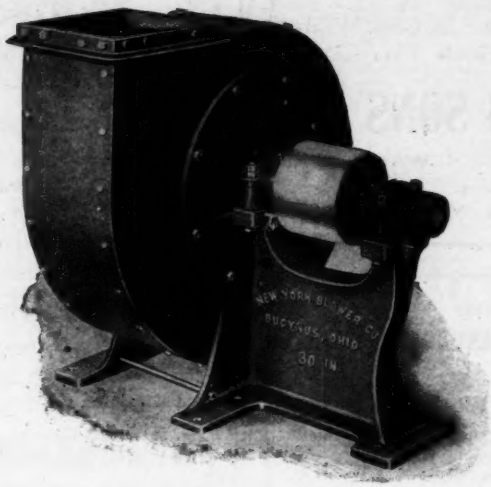
A COTTON FAN

Provided with a one-piece Fan-wheel. : : The blades are cast into a cone-shaped back.

NOTICE the short overhang—making it absolutely rigid under hard usage.

GET OUR PRICES—THEY ARE REASONABLE



Furnished throughout the South in carload lots, as these Fans are peculiarly adapted for handling cotton and stringy material of all kinds.

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THE NEW YORK BLOWER CO.,

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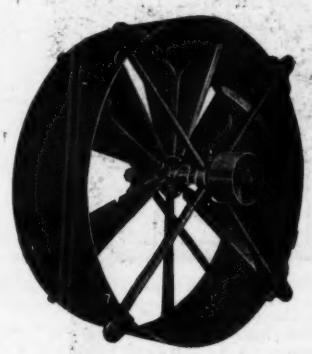
The "PERKINS" FAN

Watch This "Ad."

A New Style Fan will Appear Every Month.



Style K.

The accompanying cut represents one of the 22 styles of Fans which we manufacture. If interested, send for our new illustrated Catalogue No. 78, showing all the 22 styles. It also gives general information as to

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REMOVES
Heat,
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VENTILATION.
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BLACKMAN VENTILATOR

Pioneer Positive Powerful
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Removes Heat, Steam, Gases, Cools, Dries, Purifies.

Reward of Merit.

Over 7,000 in use.

If you have trouble in your Acid, Dye, Engine or Drying room, we prescribe the Blackman Ventilator as a remedy. Consultation free. Send for highly interesting Catalogue to manufacturers.

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It Gives More Than Satisfaction. Its Good Wearing Qualities Make New Friends Every Day.

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Especially suitable for cottonseed oil mills, ginneries and other places where heavy duty is required.

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Its size, 1 7-8 inches in diameter, feels exactly right to every man who gets it in his hands.

Always ready—no heating;
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Acts at once; stops slipping;
Preserves the belt;
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Tell your Buyer this; or write us for Free testing Sample, and say which :

RED Label Brand for Leather belts;
GREEN Label for Rubber or Canvas;
No one kind is good for all belts– you know that.

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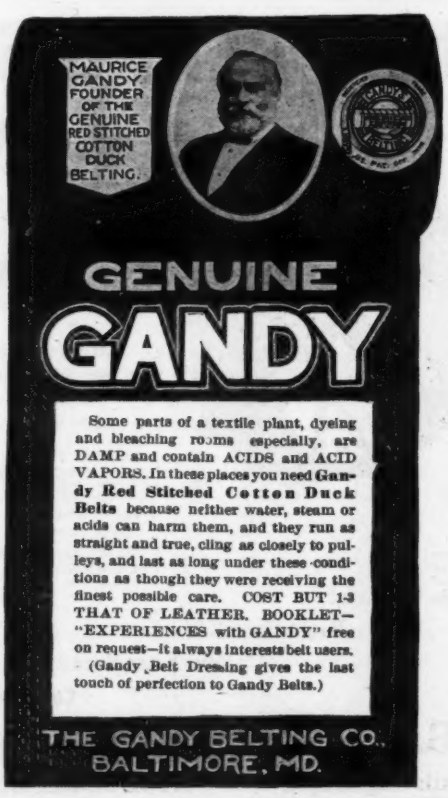
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Some parts of a textile plant, dyeing and bleaching rooms especially, are DAMP and contain ACIDS and ACID VAPORS. In these places you need Gandy Red Stitched Cotton Duck Belts because neither water, steam or acids can harm them, and they run as straight and true, cling as closely to pulleys, and last as long under these conditions as though they were receiving the finest possible care. COST BUT 1-3 THAT OF LEATHER. BOOKLET—"EXPERIENCES with GANDY" free on request—it always interests belt users. (Gandy Belt Dressing gives the last touch of perfection to Gandy Belts.)
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Factory—Glencove, N. Y.

If you have played at the above game of twisting a broom handle you know that a strong grasp is not the whole thing. The right condition of moisture and adhesiveness of the surface of the hand has something to do with it.

There is just the same difference between the tenacious clinging of the soft kidlike surface of a **Shultz Sable Rawhide Belt** running under moderate tension and the constant slipping and wear of a hard, oak-tanned belt tightened up to make it pull. The Shultz Belt clings. It can therefore run around small, high speed pulleys without slippage, burning breakage of fibres or internal friction. It is the belt to use always, try it where others fail.

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IN the lime-light for 21 years, and it hasn't been bright enough to detect a single flaw. The reason is there are none to detect. The first roofs are as good as new today, and have never needed repairs. They're easy to put on—they're fireproof; they're stormproof, and last as long as the building itself. That's our story—all of it. It hasn't changed in 21 years. The only difference between the telling of it to-day and the telling of it 21 years ago, is that we have the proof to back it up, and CORTRIGHT METAL SHINGLES are now just as easy to sell in Missouri as any other state in the union. Send for 56 page book—

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Contains no tar, paper or rubber and will not rot, melt, crack or corrode.

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To meet the demands of the cotton world for a machine to accurately and quickly handle its bookkeeping work, we have designed and are now ready to place in your office for thirty days free trial the

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This machine is arranged to list and add bale numbers, weights and values; pieces, weights and values; lengths, etc. The same standard of excellence found in the regular Pike machine prevails throughout.

With it you can save money.
May we prove this at our expense?

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Atlanta Office, 166 Peachtree Street.

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The book will contain a complete list of the cotton mills, woolen and worsted mills, mill machinery, mill supply houses, dyers, bleachers and finishers, yarn dealers and spinners, as well as many other branches of the textile industry.

One copy of the directory is distributed free. Consequently, it is the most widely circulated book of its kind and it is also the most complete.

Every reader of Cotton will undoubtedly receive one book if he is engaged in some branch of the textile business.

But to make sure you will send in your request NOW,—after publication, the book will cost you one dollar, which is the charge for additional copies.

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Dr. Ridpath's labors are deserving of the highest praise I most heartily recommend his History of the World for study and for convenient reference.

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EVERY AMERICAN CITIZEN should know the **history** of his **own country** and of the **world** to intelligently perform his full duty as a citizen in the **Government** of **This Nation.** How else are we to judge of the great national questions that crowd upon us for decision except by some knowledge of the past. **Our Colonial Policy,** the **question** of the **Trusts** agitating the great business and commercial world, the respective rights of **labor** and **capital,** the conflict between **Socialism** on the one hand and **organized business** and **industry** on the other—these and hundreds of other important questions press upon us as a nation for intelligent discussion and decision. How have such questions been met in the past? For the answer read the history of ancient civilizations which flourished, decayed and died and have been so thoroughly obliterated from the face of the earth that even the location of their splendid cities is unknown. Read the history of mighty **Babylon,** or of imperial **Rome** as a kingdom then as a republic, and finally as an empire, and familiarize yourself with her growth, development and decay. Read the history of the **French Revolution,** the establishment of the republic, out of which came the empire dominated by **Napoleon.** Then when you know history, when you know the cause of the rise and downfall of empires and nations, and not until then, will you be able to intelligently discuss and decide the great questions that are pressing now everywhere for attention. The growth, development and decay of the nations of the world constitute the most inspiring theme that can claim the attention of man It is an inspiring story, and Dr. Ridpath has told it better than it has ever been told before. **Send Coupon to-day.**

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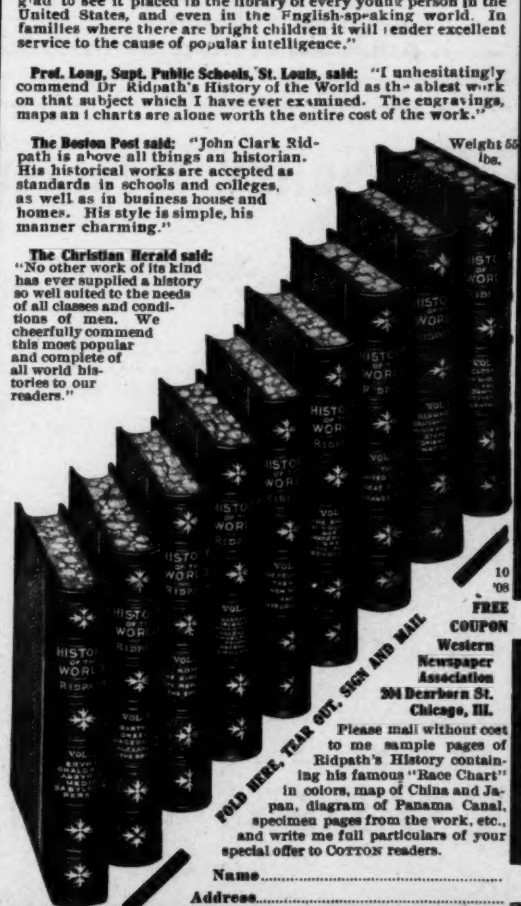
The Christian Herald said: "No other work of its kind has ever supplied a history so well suited to the needs of all classes and conditions of men. We cheerfully commend this most popular and complete of all world histories to our readers."



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Make the highest possible grade of ***paints*** for all kinds of cotton mill painting. We manufacture a different paint to meet different conditions. This is the secret of our success. Would you like to succeed in getting a good paint for a certain purpose. Send for color card, and information. : : : :

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TO KEEP THE COST DOWN

Use an accurate measuring machine that enables you to pay piece workers by the yard or pick.

Registers automatically the output of all machines.

In daily use in many cotton mills and bleacheries.

Ask for catalogue No. 21.

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Strips, Fly, Combers, Motes, Cop, Spooler, Slasher, white and colored. Buy large quantities of such material for cash Mills having such stocks to offer will please correspond with us, sending samples properly marked for identification with full details.

Mills requiring Cotton Strips, Combers, Fly Waste, Soiled Cards, Oily Cards, Rovings, etc. for spinning purposes can obtain such material from us. We are prepared to send samples upon application and quote prices for the material laid down at your freight station.

Correspondence with Manufacturers and Dealers Desired.

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THESE are the days when a wise mill man can justly feel pride in his size mixture if he is using Gum Tragasol. Size, a week old, when made up with Gum Tragasol, is just as sweet as when prepared. No size goes to the sewer.

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Our loom harnesses are especially adapted for drawing in machines. The eyes are of uniform size, are in perfect alignment across the harness, stand square and are absolutely free from twist whether made of cabled or ordinary 4-ply twine. The harnesses are made well, weave well and wear well.

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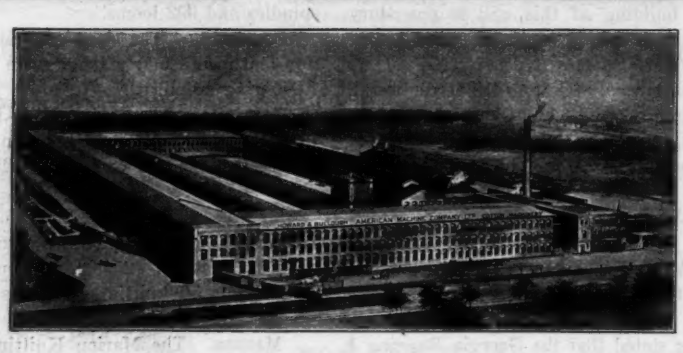

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CONE WINDERS
WARPERS and SLASHERS

WE INVITE YOUR INVESTIGATION AND COMPARISON.

RIBBON LAP MACHINE.

The ribbon lap machine made by John Hetherington & Sons, Manchester, England (represented in the United States by Stephen C. Lowe, Boston, Massachusetts), is usually made for six laps, which are put up behind and drawn at their full width. On leaving the rollers the thin web formed by each lap runs over a highly polished curved plate, and the six webs are superposed on the table, along which they are drawn by frequent pairs of press rollers to the lap ahead, consisting of two pairs of heavily weighted press rollers to consolidate the lap and of the lap drums. The draft usually approaches six. The laps from the preceding machine usually made 1" narrower than those to be made by the ribbon lap machine to allow for the spreading of the cotton in passing the draw rollers of the latter.

Stop motions are applied to each lap, so that if one runs off, the machine comes to a standstill. A full lap stop or measuring motion is also applied, so that the size of the laps can be regulated at will and all the laps made alike.

EGYPTIAN COTTON SUPPLIES.

The English Commission of Enquiry into the deterioration of the Egyptian cotton crop has satisfied itself as to the reality of the deterioration of the plant, not only in respect to yield, but also as regards the quality of the fiber.

Several witnesses before the Commission expressed the opinion that the climate of Egypt has changed radically during the past ten years with the gradual conquest of the desert by cultivation, but the Commission has found no reason to believe that any appreciable change has occurred. Nevertheless it considers that it will be well to test this conclusion by continuous observation carried out in the cotton-bearing districts that are at some distance from the Alexandria and Cairo observatories.

As to fertilizers, the Commission is of the opinion that it is most necessary to increase their use and supply by the import of chemical manures.

The Commission suggests that the Government of Egypt should keep full and complete records in the different provinces of the cotton crop, which would be valuable both to growers, merchants, and foreign manufacturers.

A remarkable development of cotton culture is shown in Upper Egypt where the total yield has grown from 399,000 cantars in 1897 to 1,278,000 (estimated) this year. Here, as in the Delta, a constant retrogression in the yield per acre has accompanied the increase in production, namely, from 5.21 cantars per feddan in 1897 to 4.08 in 1908. Taking the same period the decline in the Delta is from 5.59 to 4.42.

SLIVER LAP MACHINE.

John Hetherington & Sons, Manchester, England (represented in the United States by Stephen C. Lowe, Boston, Massachusetts), make a sliver lap machine with three pairs of drawing rollers, followed by two pairs of calendar rollers for consolidating the lap, which can be made 7½", 8¾", or 10½" wide, as may be desired, with 14, 18, or 20 ends up as may be required. Each end is provided with an automatic stop motion which brings the machine to a standstill before the broken end enters the rollers. It is on the same principle as that applied to the drawing frame. A full lap stop motion or measuring motion is also applied so that the size and weight of the laps can be regulated at will. The 7½" laps usually weigh 10 dwts. to the yard, and the 8¾" laps 11.5 dwts. to the yard. The draft in the machine should not be more than two.

MILL NEWS.

Notices of mill projects, additions or improvements are solicited for this department.

ALABAMA.

Bon Air. The Coosa River Spinning Company will soon have its hosiery yarn mill completely installed with machinery. The main building of this mill is one story high, 102x108 feet, and is being equipped with 10,000 spindles.

Gaylesville. The Gaylesville Cotton Mills will install from 4,000 to 5,000 spindles for the manufacture of yarns. The capital is $100,000. The plans for the mill are about ready, when bids for construction will be invited. E. J. Chestnut is secretary.

ARKANSAS.

Conway. Through the effort of the Board of Trade the Nashville Woolen Mills, Nashville, Ark., will be moved to this place and operated under the management of James McMahon.

Little Rock. It is stated that the Georgia Bagging & Tie Company, Augusta, Ga., is contemplating the establishment of a jute bagging mill at this place in which there will be invested $60,000.

FLORIDA.

Pensacola. Oscar Davis, Columbus, Ga., is said to be interested, as representing a number of Georgia manufacturers, in a proposed cotton mill to be located at this place. Packard Land Company, Blount Building, of this place, can furnish information.

GEORGIA.

Elberton. The warehouse of the Swift Cotton Mills was burned last month.

Atlanta. Joseph Loewus of this place has a scheme in hand for inducing Boston capital to erect a textile machine shop or something of this kind, in this city. The plans have not yet been consummated or exactly formulated, but the negotiations are going on. Mr. Loewus tells us that he intends to go to Boston the early part of this month in order to hasten negotiations.

Augusta. A company is to be incorporated for the manufacture of hosiery in this place, in which J. J. Tyler and J. Inman Davis of Hephzibah, Ga., are interested.

Waycross. The Board of Trade is interested in the organization of a company to build a cotton mill here.

LOUISIANA.

Ruston. It is proposed to build a cotton mill in this place and information in regard to the plans can be obtained by addressing H. W. Ragan, mayor.

MISSISSIPPI.

Hattiesburg. Local business men are interested in a proposition of New England capitalists to locate a cotton mill in this locality.

NEW YORK.

Utica. The General Knit Fabric Company has been incorporated with a capital of $10,000 to make and sell hosiery, underwear, etc. Robert W. Scott of Leeds Point, N. J., is one of the parties interested.

NORTH CAROLINA.

Burlington. The Williamson Cotton Mfg. Company has been incorporated with a capital of $125,000 in which F. L. Williamson is interested.

Charlotte. The Jewell Cotton Mills expect to begin construction of their buildings this fall, and will commence with an installation of 6,144 spindles for the manufacture of 60's to 100's two-ply, combed yarn. $100,000 will be expended for the first installation with the intention of doubling the capacity in the course of a year. T. J. Lillard is treasurer.

Concord. The Cannon Mfg. Company held a stockholders' meeting last month to increase its capital from $600,000 to $1,000,000. The mill is now operating 30,000 spindles and 992 looms.

Cornelius. The Gem Yarn Mills are to build an addition and install new machinery to its present equipment of 1,600 ring spindles.

Gastonia. The Loray Mills have awarded a contract to the Western Electric Company, Chicago, for an electrical equipment to operate textile machinery at a cost of about $65,000.

Marion. The Mount Ida Hosiery Mills, to which we referred in our last month's issue, as being incorporated with a capital of $25,000, will build a 40x110 ft. building and install 50 knitting machines besides ribbers, loopers, etc. R. L. Greenlee is treasurer.

Marion. The Marion Knitting Mills, to which we referred in our September issue as being incorporated with $25,000 capital, has been organized with W. W. Neal as president. The building will soon be erected and 50 machines installed for knitting hosiery.

Roanoke Rapids. The Roanoke Mills Company has completed its new mill, and machinery will soon be installed in it consisting of 8,000 spindles and 200 looms.

Vass. A cotton mill is about to be built here for the manufacture of yarn. The main building is to be 78x228 feet with a capacity of 5,000 spindles. A. Cameron is one of the parties interested.

SOUTH CAROLINA.

Edgefield. The Edgefield Mfg. Company is to increase its capital $150,000 with the intention of doubling its present capacity of 5,000 spindles and 325 looms.

Jonesville. The Jonesville Mfg. Company is to rebuild its hosiery mill that was recently burned at a loss of $95,000, in which was operated 250 knitting machines, etc. The plans for the new mill have not yet been decided upon in detail.

Liberty. The Liberty Cotton Mills have increased their capital from $175,000 to $200,000.

Reedy River Factory. The Reedy River Mfg. Company's mills that were damaged recently by flood at an estimated loss of about $15,000 will be repaired immediately.

Rock Hill. The main structure, 127x310 feet, one-story high, of the Wymojo Yarn Mills, has been completed at a cost of nearly $29,000. The capacity of this mill will be 10,000 spinning spindles, 5,000 twister spindles, and accompanying machinery. The machinery will be driven by individual electric motors. The architect and engineer is O. A. Robbins, Charlotte, N. C.

Rock Hill. It is said that the Hamilton Carhartt Cotton Mills will double their plant by increasing their equipment about 7,500 spindles and 204 looms, etc.

Spartanburg. The Saxon Mills, manufacturing print cloths, etc., have awarded a contract for 10,000 spindles and 350 looms to be added to their present equipment of 30,464 spindles and 745 looms.

Tucapau. The Tucapau Mills are to replace with solid masonry 150 feet of the wing wall of the power plant recently carried away by high water.

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Walhalla. The Oconee Knitting Mill intends to put up additional buildings and install 100 more machines instead of 50 machines as stated in our August issue.

TENNESSEE.

Chattanooga. The Buster Brown Hosiery Company has been incorporated with a capital of $5,000. J. L. Hughes is one of the incorporators.

Chattanooga. The Southern Sockery has been incorporated with a capital of $5,000 capital stock for the purpose of selling hosiery made by contract. This company may establish a knitting plant in the future. E. E. Hogue is president.

Nashville. It is stated that a company is about to be formed here with a capital of $100,000, to erect a cotton mill in which W. T. Lang of the Brookside Mills is interested.

TEXAS.

Gainesville. It is stated that local capitalists are interested in the establishment of a cotton mill in this place, and an effort is being made to induce Northern capitalists to come here and assist in the enterprise.

Galveston. The Business Men's League is reported as interested in the forming of a company to build a bagging factory here.

Mexia. The Young Men's Industrial Club is interested in a proposition from Boston capitalists for the establishment of a cotton mill in this locality provided that their requirements are met. The plan is to put up a mill to employ about 500 hands.

Palestine. The Board of Trade of this place is corresponding with Boston capitalists for the erection of a cotton mill at this place. It will be observed that in many of the foregoing items Boston capitalists are referred to as taking an interest in cotton mills projects in the South. This scheme on the part of the Boston parties covers all of the Southern States from Georgia to Texas, and is promoted by Frank E. Baldwin, Boston, Mass.

VIRGINIA.

Bedford City. The Bedford Mills Company, manufacturing woolen goods, are to build a 55x75 foot addition, and add machinery for increased production. These mills are owned by the Thos. Kent Mfg. Co., Clifton Heights, Pennsylvania.

Portsmouth. Jos. A. Parker, proprietor of the Parker Hosiery Mill & Dye Works is about to erect a new hosiery mill, two stories high, brick, 60x160 feet, to be operated by electricity. Connected with this will be a dye house 40x115 feet, engine house 50x60 feet. Mr. Parker intends to remove the equipment of his present mill to the new mill.

WEST VIRGINIA.

Fairmont. The Knox Sox Company has been organized at this place with a capital stock of $5,000. While this company has purchased only six machines for the initial plant a larger building and larger equipment will be installed at a later date.

A little consideration will show the difficulties in the way of combing short cotton, without taking out too much waste.

The primitive weaver was generally a male and the spinner a female, though this division of labor was not absolute.

AMONG SUPERINTENDENTS, OVERSEERS AND OTHERS

We shall be pleased to receive notices of any changes among agents, superintendents, and overseers in textile mills.

We stated in our August issue that Albert Baechtold had accepted the superintendency of the Highland City Mills, Talladega, Ala. This was only temporary, and the statement might be misleading for Mr. Baechtold has not given up the superintendency of the Chinnabee Mills of this place.

T. G. Moser is now overseer of weaving for the Millfort Mill Co. at Fort Mill, S. C.

W. A. Skidmore has taken charge of the spinning department of the Chadwicks Mills, Charlotte, N. C.

E. M. Walters is now overseer of spinning at the Hoskins Mills, Charlotte, N. C.

J. B. Cleary is now overseer of spinning in the Buffalo Mills, Concord, N. C.

G. W. McBroom has been chosen superintendent of the Wehadkee Yarn Mill, Rock Mills, Ala.

J. P. Wood is now overseer of carding at the Natchez Cotton Mill, Natchez, Miss.

Owen Parker has become overseer of spinning in the Natchez Cotton Mill, Natchez, Miss.

W. M. Abernethy is now overseer of carding for the Lula Mfg. Co., Kings Mountain, N. C.

G. T. Marsh has become superintendent of the Avondale Mills, Birmingham, Ala.

Herman Jolitz is now overseer of the finishing for the Gibson Mfg. Company, Concord, N. C.

C. Lester Oates has taken the position as assistant superintendent of the Dan River Cotton Mills, Danville, Va.

E. A. French has become overseer of the weaving for the Lincoln Cotton Mill Co., Evansville, Ind., and is also assistant superintendent.

T. B. Howard has assumed the position as overseer of carding at the Yocoma Mills, Water Valley, Miss.

C. W. Rice is now superintendent for the Orangeburg Mfg. Co., Orangeburg, S. C.

W. O. Tallent is now superintendent of the Aldora Mills, Barnesville, Ga.

S. H. Howard is now overseer of carding and spinning for the Cannon Mfg. Co., Kannapolis, N. C.

W. A. Morris is now overseer of carding for the Bibb Mfg. Company, Porterdale, Ga.

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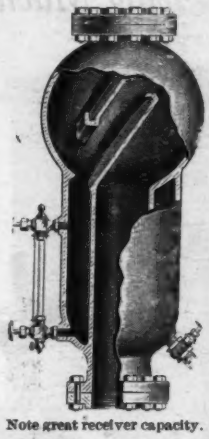

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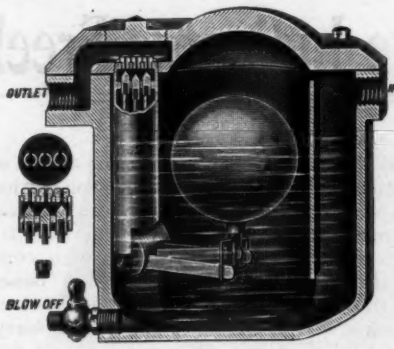

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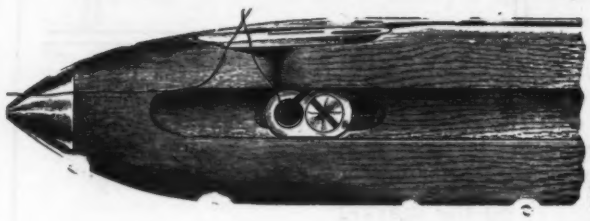

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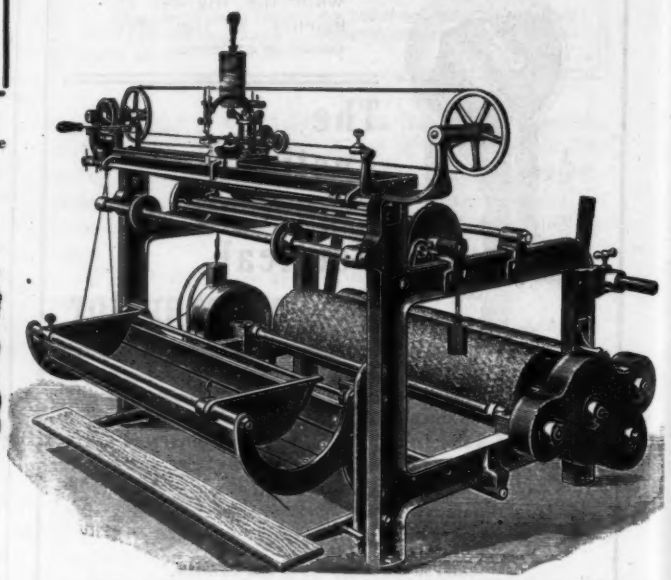

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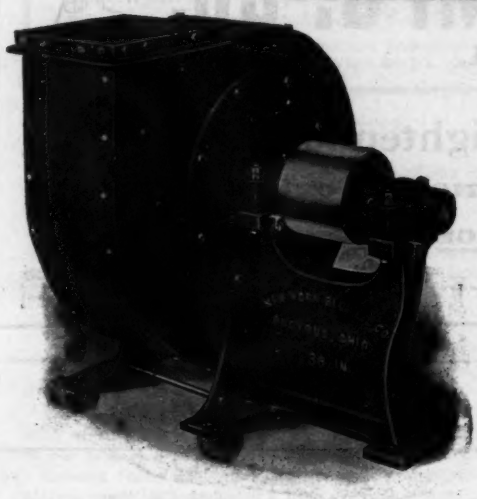

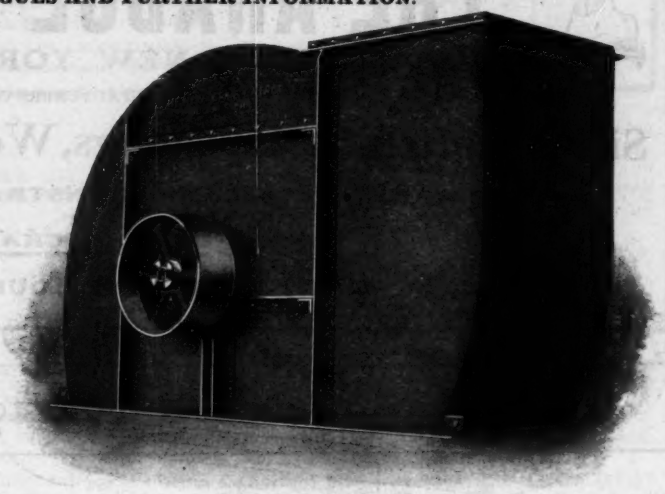

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CLASSIFIED ADVERTISING---NO CHARGE.

Help Wanted, Situations Wanted, Second hand machinery for sale by mills and Unclassified notices will be inserted under this heading FREE of charge for any reader.

Mark letters with proper number and address to COTTON PUBLISHING Co., Prudential Building, Atlanta, Ga. Applicants for positions sh uld enclose COPIES ONLY of recommendations. We will gladly and without charge forward all letters.

UNCLASSIFIED.

Auditor with special facilities for handling cotton mill accounts has a special proposition to make to mill owners. Address No. 242, care Cotton.

Party Establishing Cotton Mill at this point will have support and co-operation of Chamber of Commerce. Address F. H. Gohete, Secy., Chamber of Commerce, Wichita Falls, Texas.

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Pratt Long Chain Quiller Wanted.—Address E. M. Holt, Plaid Mills, Burlington, N. C.

Yarns Wanted by large Georgia mill; wants to arrange with spinner or commission merchant for constant supply of 8's and 13's on tubes. Address 247, care Cotton.

Second Hand Double Flyer Speeders Wanted.—Intermediates and slubbers. Lock Box 338, Burlington, N. C.

Thread Waste Wanted.—If you have any thread waste for sale write Massasoit Mfg. Co., Fall River, Mass., for prices.

Sheeting Wanted.—Good quality, unbleached; to count not less than 68 threads warp and 70 threads filling; to weigh about 7 ounces; tensile strength, 58 lbs. to in. of warp; 52 pounds to inch of filling; to be 90 in. long and 48 in. wide, hem at top 2 in.; hem at bottom 1 in. Address Badger Mfg. Co., Racine, Wis.

FOR SALE.

Hydro-Extractor for Sale.—Tolhurst; belt driven; 40-inch copper basket; will sacrifice for quick sale. A. H. Washburn, Charlotte, N. C.

Ten Foster Cone Winders for Sale, also 100 spindles, 1900 pattern; 30 Universal winders, 6 spindles each; No. 5A for 6-inch cones. Address No. 260, care Cotton.

Several Napping Machines for Sale.—In good order and at a bargain. Address No. 238, care Cotton.

Childs Factory Fire Extinguishers; a dozen for sale cheap; never used; cost $15.00 each; sell for $8 each; latest model. Address No. 227, care Cotton.

Top Stripper Patents for Sale.—Machine in successful operation in a number of mills since 1899, with marked improvement in yarns and cloth; applied to modern cotton card; an immensely successful and practical invention, present owner unable to place same on market. Address William Hayes, Auburn, Me.

Dyeing Machine for Sale.—New, never used; Salem Iron Wks. make; will accept much less than cost for quick sale. Address 281, care Cotton.

5,300 Spindle Cotton Mill for Sale, equipped for making duck up to 20 oz. 40 inch. Adequate house room for operatives, including 13-room boarding house. Machinery of the very best make and condition A-1. Twisters and duck looms. Will gladly furnish information. Address H. L. Gardner, Receiver, Eatonton, Ga.

HELP WANTED.

Selling Agent Wanted to represent a dyewood extract manufacturer in the Southern territory. Must be familiar with the cotton trade. Address No. 261, care Cotton.

Wanted a Man Calling on Dyehouses, bleachers, etc., to handle side line which is a fast seller. Address No. 277, care Cotton.

Man Calling on Mills to Handle Side Line of brushes, etc. Address No. 278, care Cotton.

Wanted a Competent Man with $10,000.00 to take charge of cotton mill. Address No. 279, care Cotton.

Salesman wanted to carry needles, as a side line. Address 282, care Cotton.

Salesman wanted to sell in the South the best, one of the oldest and most successful mill sewing machines on the market. Address 283, care Cotton.

Southern Representation Wanted.—We are in receipt of inquiries from a number of Northern Manufacturers who want representation in various lines; some want supply houses to take on their accounts; others want salaried traveling men and others want men now calling on Southern mills to handle their goods as a side line. Some of these agencies are extremely desirable and we shall be glad to bring the selling force and the manufacturer together on request. Address Cotton Publishing Co., Atlanta.

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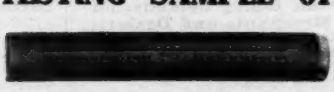
Cotton Mill Bookkeeper Wants Position.—Change desired on account of school facilities; 38 years old; 10 years as bookkeeper and secretary of one of the most successful mills in North Carolina. Have a system by which can be determined at the end of each month what the mill makes or loses. Let me figure with you; good times coming; can make change January 1st. Address No. 280, care Cotton.

Superintendent wants position in small yarn mill; 8 years in the mill; experienced on blends and white yarns, nos. 2 to 45; references from present employers; can leave on two weeks notice; am able to command reasonable salary. Address, Habersham King, Jr., Louis Cotton Mills, Douglasville, Ga.

FREE TESTING SAMPLE OF 

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In either case my unique service is at your disposal

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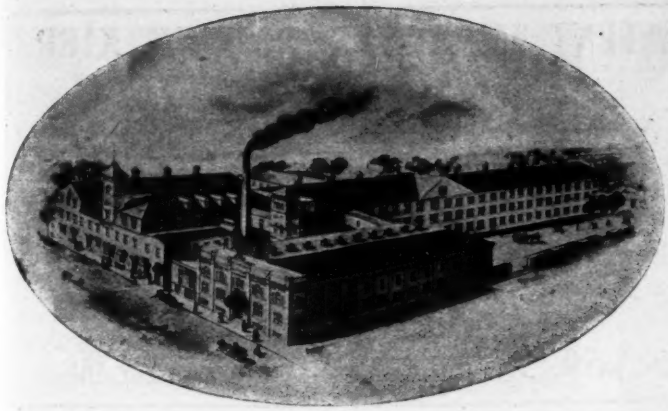

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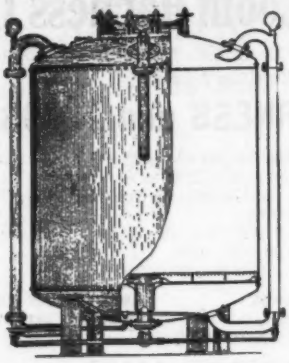

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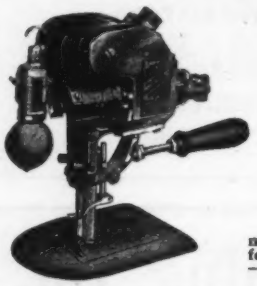

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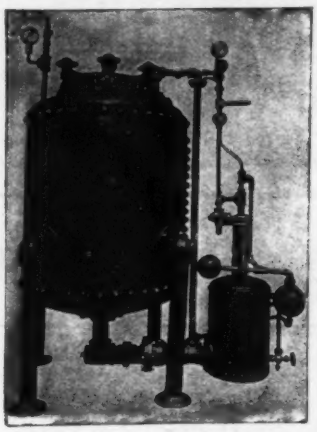

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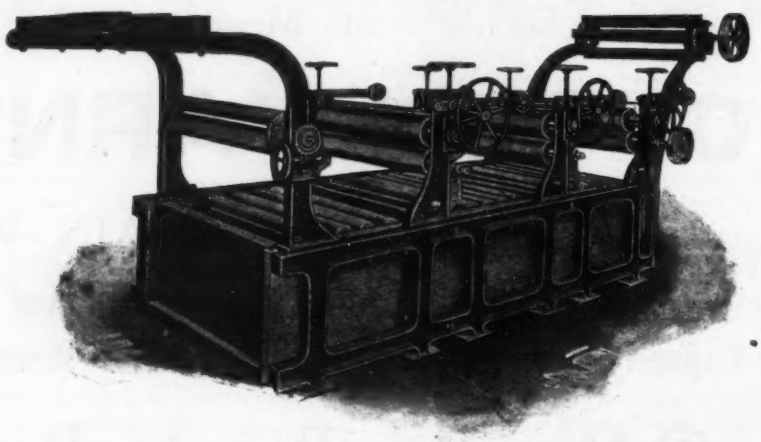

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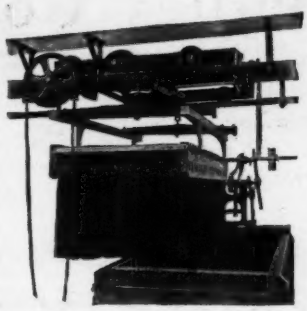

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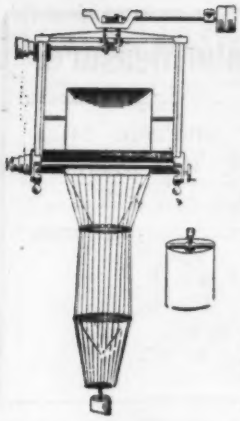

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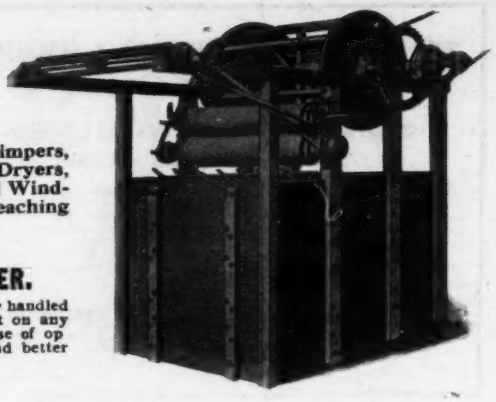

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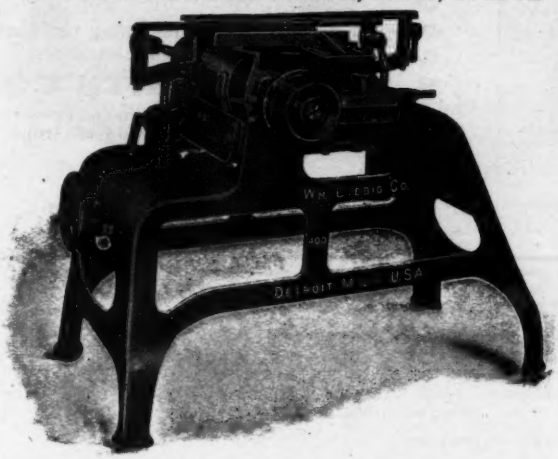

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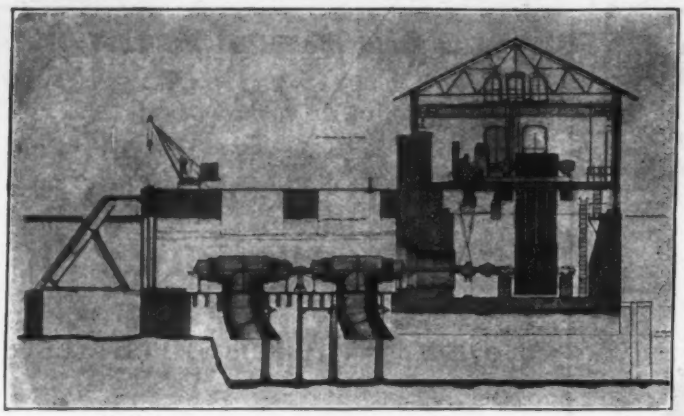

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We make a specialty of designing turbines to meet the requirements of customers.

S, MORGAN SMITH CO.

Manufacturers of Water Wheels, Power Transmitting Machinery, Head Gate Irons Flume Work.

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Boston Office: 176 Federal Street

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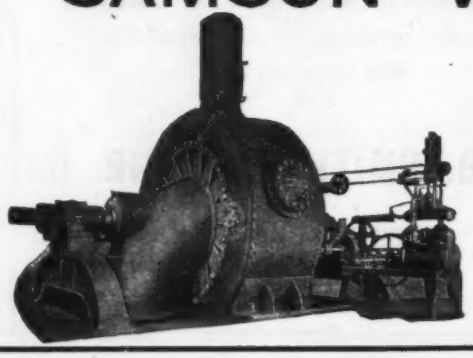
SAMSON WATER TURBINE



The illustration shows the large NIAGARA design, HORIZONTAL SHAFT TURBINES recently installed by us for the TELLURIDE POWER TRANSMISSION CO. power station, Logan, Utah. Tests conducted by competent engineers developed as follows:

Head	Gateage	Speed	H. P.	Generator Eff'cy	Turbine Eff'cy
211 5 ft.	¼	400 r p. m.	1038	95.20%	73.80%
209.7 ft.	½	400 r p. m	1560	96.50%	83.59%
208.9 ft.	Full	400 r p. m	1677	96.70%	80.57%

These results have never been equaled by any turbine of the Horizontal Shaft Design, operating under equally HIGH HEADS. The test was made AFTER TURBINES WERE INSTALLED, direct coupled to Generators. Francis' weirs and formulae for discharge were used. The original test reports on file at our offices. These turbines are all fitted with our SAMSON BALANCE GATES. Note especially the UNIFORM SPEED at ALL GATEAGES.

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And Headgate Hoists

are specialties with us.

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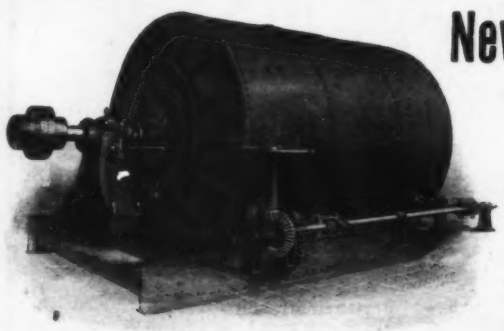
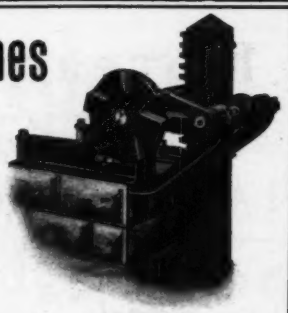
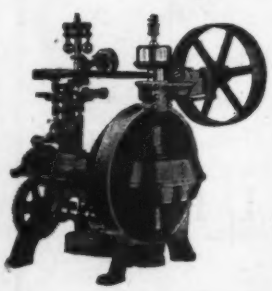
stating your requirements.





The Dayton Globe Iron Works Co., Dayton, Ohio

The Woodward Compensating Water Wheel Governor



Is no experiment, as 1500 are in use regulating textile mills, paper mills, electric light and power transmission plants, The users will tell you how good they are. Tell us about your needs and ask us to send you our 1908 catalogue and the names of some users near you.

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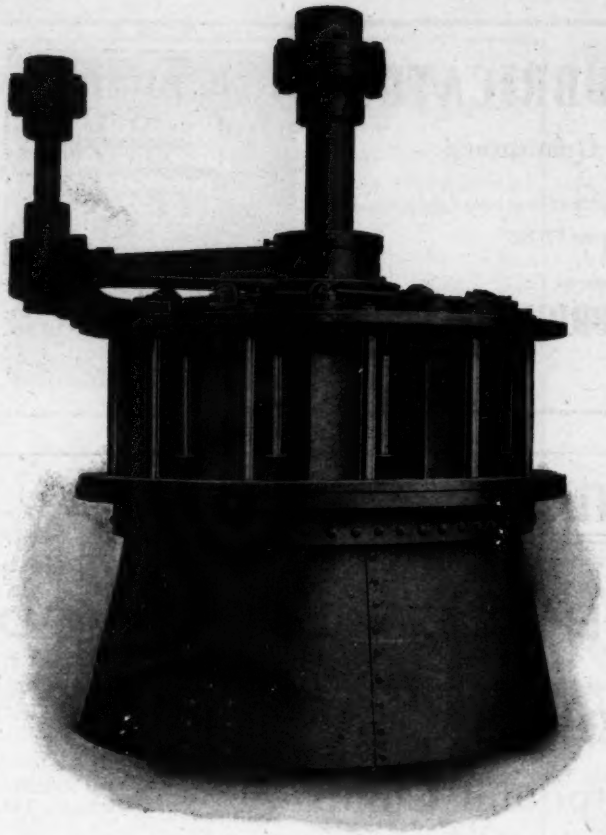

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The Splicing Machine

makes an old *broken* cotton tie as good as new by securely fastening the ends and making a strong band.

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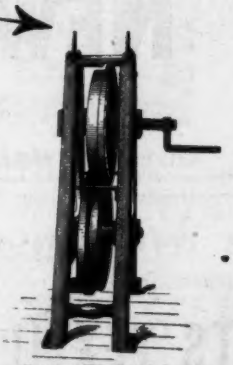
makes an old *bent* cotton tie as good as new by taking out the kinks and twists.



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These machines convert worthless material into useful property and save many a dollar that would otherwise be spent for new bands.

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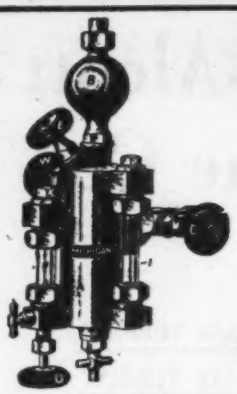

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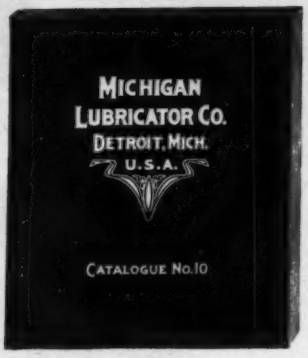

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You know that, but don't realize it. One-eighth inch of scale means one-third more fuel. Think of it! You can remedy that—remove present scale, and prevent further scale, and have a sound healthy boiler by use of

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It positively removes incrustations, corrosions and rust, preserving the iron and giving you a longer lived boiler. We guarantee it to be absolutely FREE from all acids or anything injurious to boiler or tubes. Send us a sample of your feed water; we'll analyze it and prepare our Compound accordingly. Send order, with sample quart of water, to-day to

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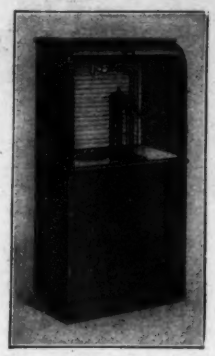

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Better Lubricating Oil

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It would mean that your friction troubles would be practically over and that your oil bill would be reduced.

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Will give you clean oil, free from all dust and grit,—just as pure as when it left the refinery.

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Even though all change does not mean progress.

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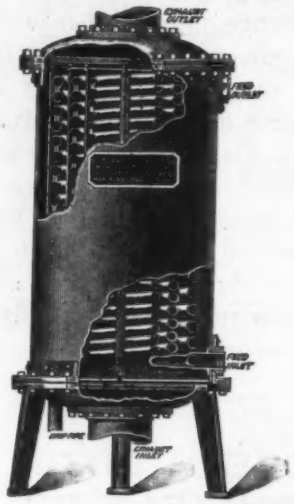

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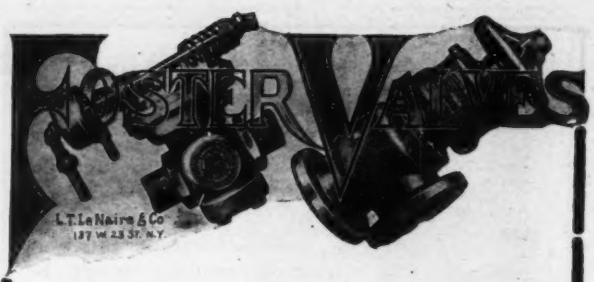

Class "W" Valve

We want to call your attention again to the Foster Class "W" High Pressure Regulators. These valves maintain a constant delivery pressure, regardless of fluctuation in initial boiler pressure.

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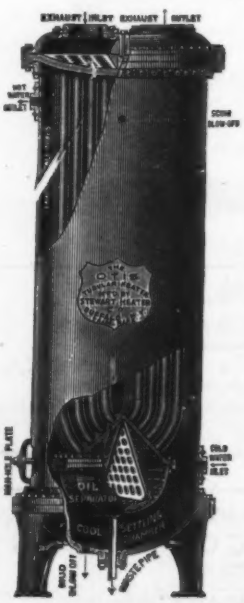
TUBULAR FEED-WATER HEATER, OIL SEPARATOR AND PURIFIER



Is guaranteed to deliver the water to the boiler at boiling temperature (210° to 212°). It will also extract the oil from the exhaust so that the steam after passing through the heater, may be used for heating purposes, and the condensed water returned to the boiler without any additional elimination.

Give the Otis a trial, and if you don't find it satisfactory we will pay the freight and carriage both ways.

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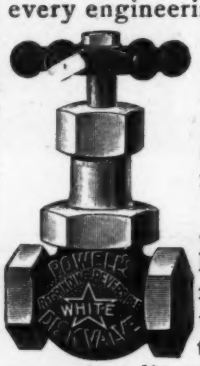
The best and most economical valve for every engineering purpose. Whether you use it for the control of Steam, Water, Gas or Air, or for the control of fluids it will be found to give absolute and entire satisfaction.



The best proof is a trial—put a White Star in the hardest place and note results. We know that it will stand every ordinary test and a good many that are not ordinary, that's why we are confident that it will do YOUR work.

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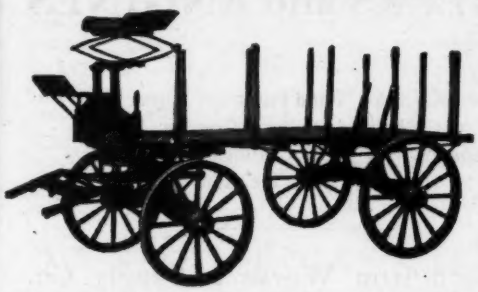

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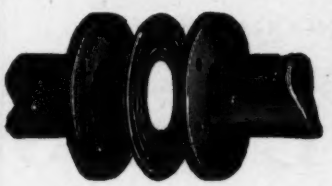

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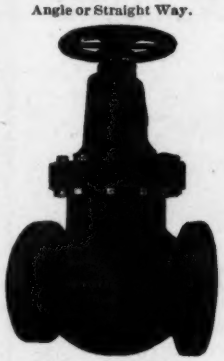

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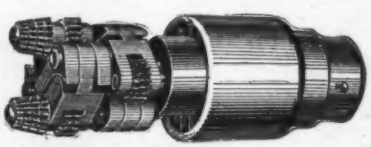
That is what the American Spirits Mfg. Co., of Peoria, Illinois told us after three months use of the new



Weinland Wing Head Turbine Cleaner

We will send you all charges paid, a cleaner like the one shown above. Try it on your dirtiest boiler, and if you wish, in competition with any other cleaner made. If the results don't indicate exactly what the American Spirits Mfg. Co. say, you don't have to keep the cleaner, nor will the trial cost you one cent.

If you have much cleaning to do, ask about our new Weinland Steam or Air Driven Mechanical Cleaner. We sell or rent this machine, or will clean your boilers on contract.

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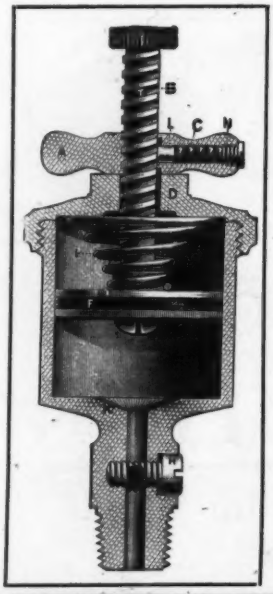

Lunkenheimer Grease Cups

Are always reliable and will feed any desired quantity of grease.

Do not shake to pieces when placed on jarring machinery.

IT'S QUALITY

THAT MAKES THEM THE LEADERS

Your local dealer should have them, if not, write us.

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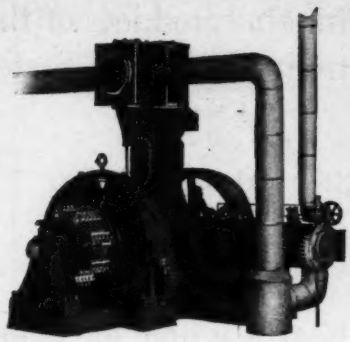

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The AMERICAN-BALL ANGLE COMPOUND ENGINE is smooth-running at all speeds. Moreover, it has a practically uniform turning movement, requiring less fly-wheel weight, reducing friction losses and enabling alternators to run parallel without cross currents. This engine occupies practically the same floor space as a simple engine of half the power. A stout concrete floor will do for foundation. Two light pistons, one vertical, make less friction and wear in the cylinder.

These are some of the results from one original step in design. We have also incorporated all the good features developed in building large numbers of simple and compound high-speed automatic engines.

Our little booklet presents all this in a compact and readable shape. Send for a copy.

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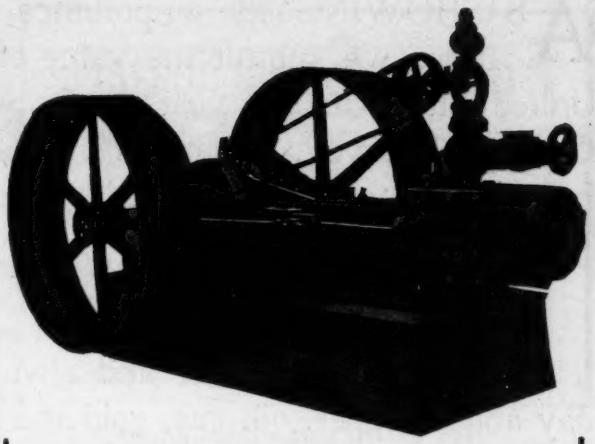

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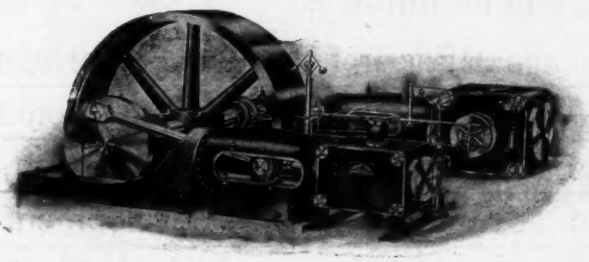
MANUFACTURERS OF

High Pressure Return Tubular Boilers, High Grade Stationary Steam Engines, Tanks, Stacks, Stand Pipes.

Heavy Castings and Wrought Iron Work.

"Now Watch Her Send Back For Her Mate"



That's a common saying in our shops whenever a HARDIE-TYNES ENGINE is sent out.

It isn't superstition—it's experience.

Our men have worked on so many duplicate orders either from the same power houses, or others in the same vicinities, they firmly believe that wherever a HARDIE-TYNES goes—and it goes almost everywhere now—it will sooner or later send back a call for its mate.

If you would like to know more about engines which inspire such faith in the men who build them.

Write for our catalogue.

HARDIE-TYNES MANUFACTURING COMPANY

Corliss and Slide-Valve Engines, and Complete Power Plants for Every Purpose.

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AS SHOWING the importance of the coal industry at the present time, we submit the value of the leading mineral products of the United States to the year 1906, which we get from the United States Geological Survey, Bulletin No. 316.

Coal - -	$513,079,809	Clay Products	$161,032,722
Iron - -	505,700,000	Oil and Gas	137,318,667
Copper -	177,595,888	Gold and Silver	132,630,200

Coal heads the list and always will. We hear a whole lot every day about copper, oil, gas, gold and silver, but the total value of all these products doesn't equal that of coal, and not one of them could continue in business without the fuel, coal. Coal is the foundation upon which all of our industries are built.

The CROSS CREEK COAL COMPANY have a large acreage, (7,000 acres), and an immense tonnage, estimated from sixty million (60,000,000) to one hundred million (100,000,000) tons, and the profit in operation is exceptionally large, over $1.00 per ton.

Those having funds to invest are invited to communicate with the office, 609 MUTUAL LIFE BLDG., BUFFALO, N. Y., where particulars as to the bonds, the BONUS OF PREFERRED STOCK, the management, reports, etc., will be furnished.

Several years ago "Pig Iron" Kelly, Father of the House of Representatives, said,--"The South is the coming Eldorado of American adventure. As to the mountainous region of the South, it is richer in natural wealth and in advantages for the development of that wealth, it has a finer climate, better water and higher conditions of health than any region of which I have any knowledge."

Abram S. Hewitt, rightly, when living, called, "The first citizen of America," said,--"There is no corresponding region on this habitable globe which has so many advantages as the South."

The United States Steel Corporation, probably the largest and best managed corporation in the world, have recently added to their holdings the coal lands immediately adjoining us on the north.

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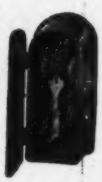
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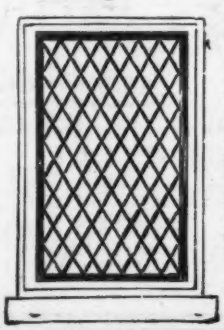

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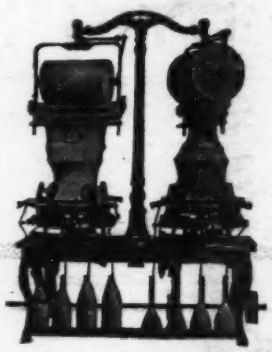

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